CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

K · M · VARMA

4022

THE INDIAN TECHNIQUE OF CLAY MODELLING

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

STATE MUSEUM, LUCKNOW
LIBRARY
Acc. No. 4022
Book No. 731
V I

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

4022

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

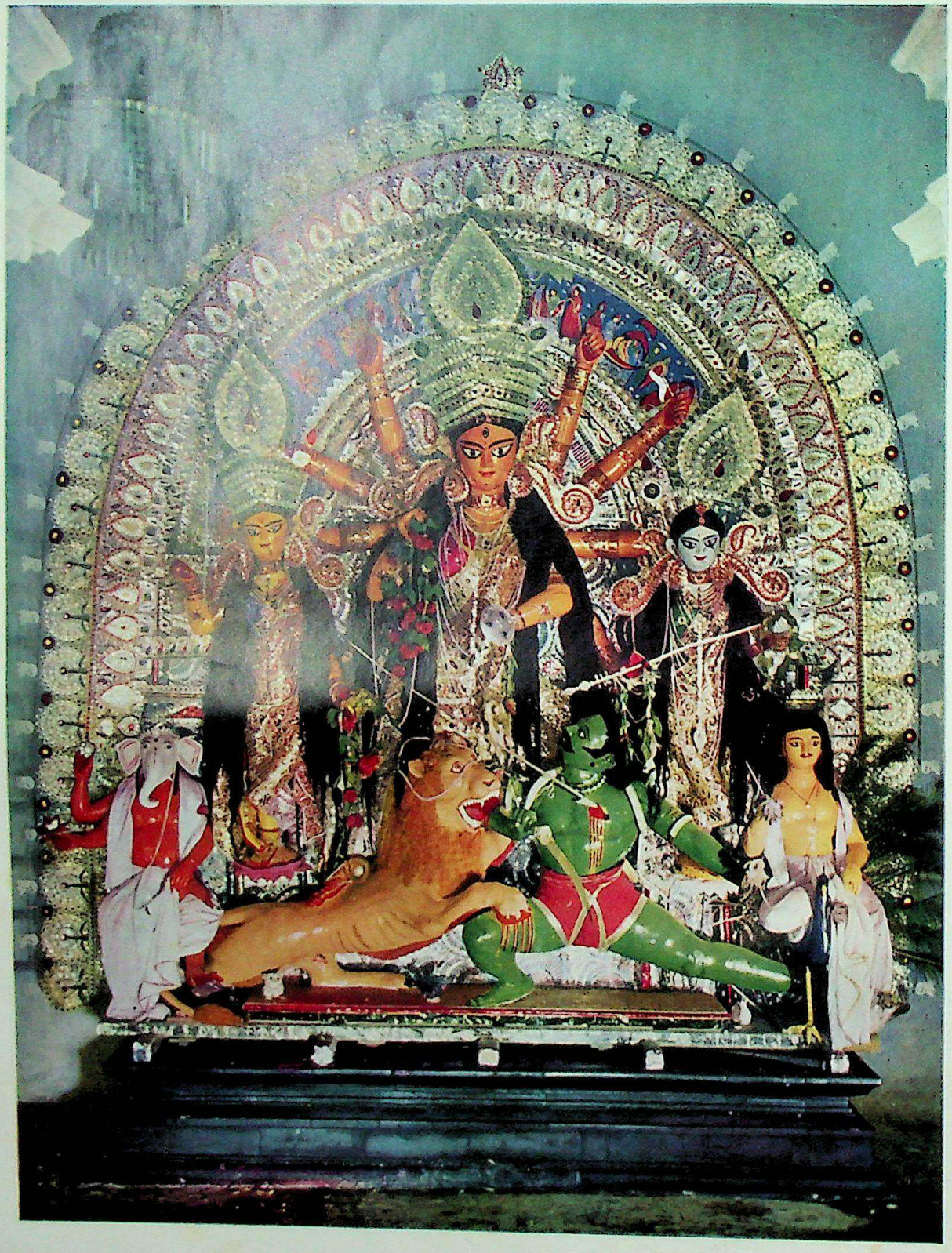
CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

THE INDIAN TECHNIQUE OF CLAY MODELLING

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh



Panel of Clay Images
Durgā, as Mahiṣāsuramardinī, with Demon and Deities
Village: Surul, Dist: Birbhūm, Bengal
(Sarkār Family, Baḍo Bāḍī)
1968

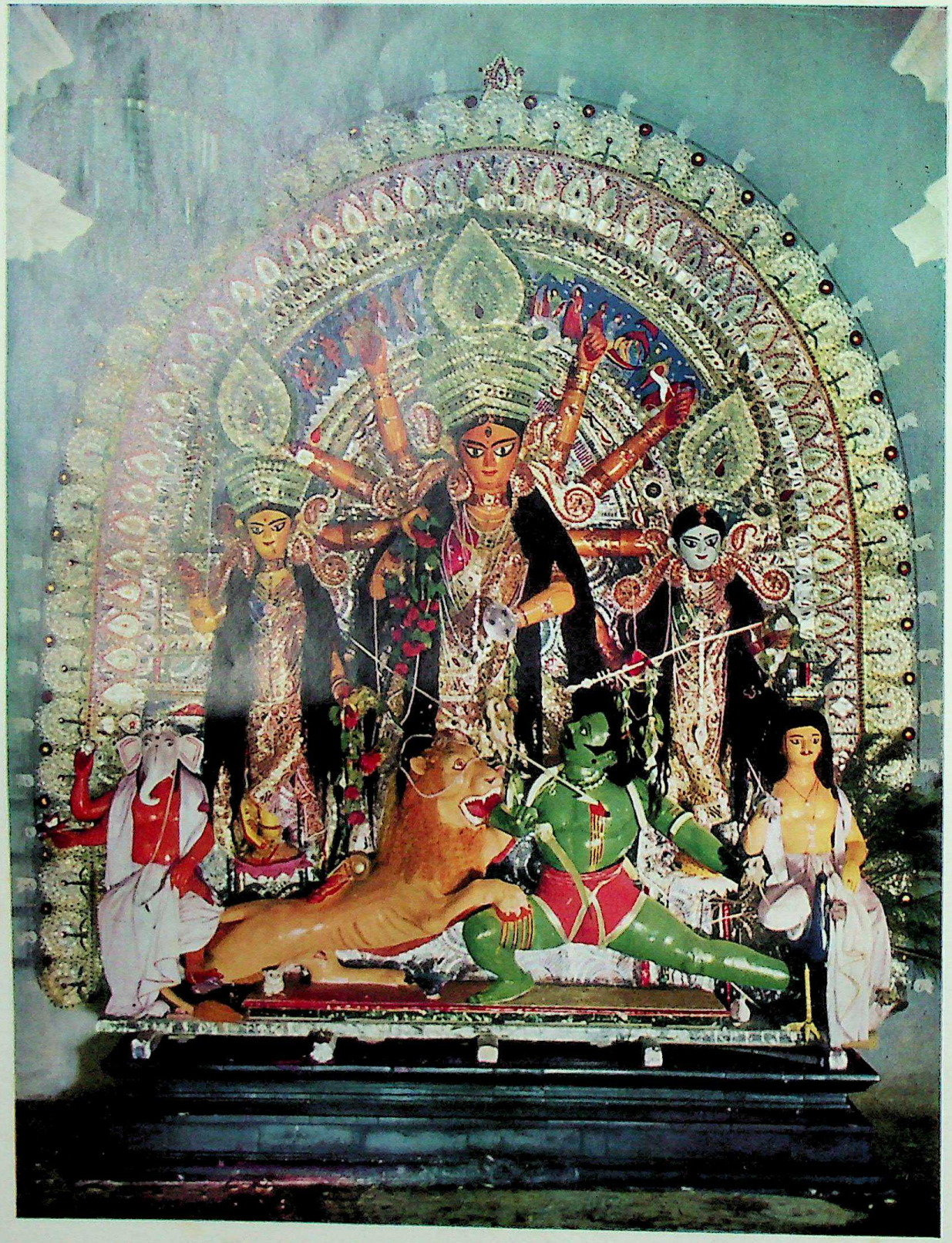
CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

THE INDIAN TECHNIQUE OF CLAY MODELLING

By
K. M. VARMA

PRODDU
SANTINIKETAN
1970

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh



Panel of Clay Images
Durgā, as Mahiṣāsuramardinī, with Demon and Deities
Village: Surul, Dist: Birbhūm, Bengal
(Sarkār Family, Baḍo Bāḍī)
1968

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

THE INDIAN TECHNIQUE OF CLAY MODELLING

By
K. M. VARMA

PRODDU
SANTINIKETAN
1970

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

© K. M. Varma

The reproduction of this text or any part thereof by any process or the translation of it into any language is not allowed without written permission.

First Published December 1970

731.
V 1

Text

Printed by S. K. Ghosh, at the Calcutta Press Private Ltd.,
1 Raja Subodh Mullick Square, Calcutta-13.

4022.

Plates

Block-making and printing by the Reproduction Syndicate, 7/1 Bidhan Sarani, Calcutta-6.

Binding

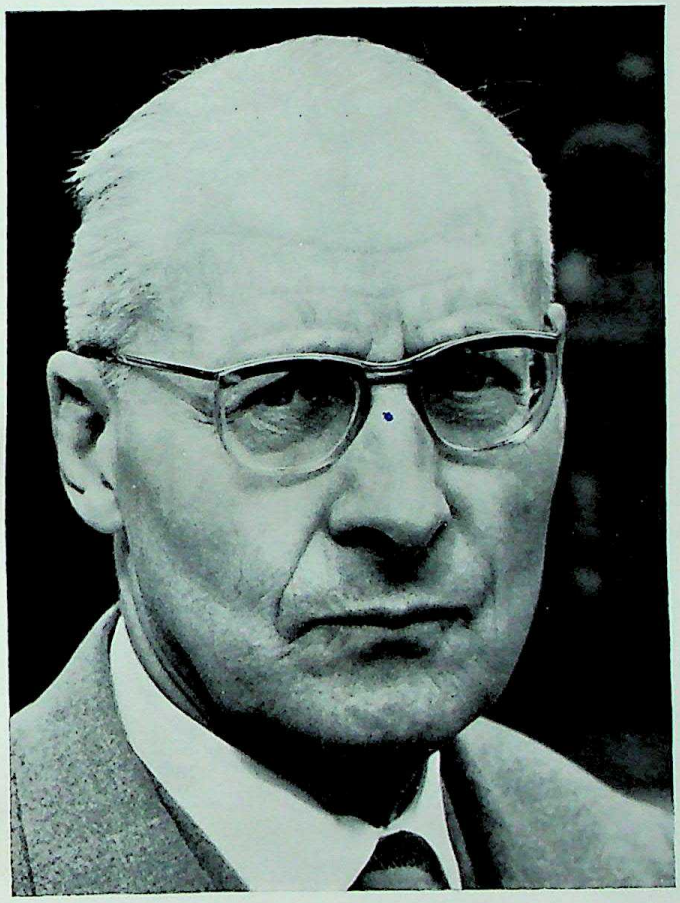
New Bengal Binders
72A Sitaram Ghosh Street, Calcutta-9

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

DEDICATED

TO

MY ESTEEMED TEACHER



Prof. Dr. Hans Kauffmann

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

NOTE I

The authorities of the Alexander von Humboldt-Stiftung, Bad Godesberg have enabled the author to write a considerable part of this book by granting a Fellowship for the study of art history in the Kunsthistorisches Institut of the Freie Universität, Berlin.

NOTE II

The Government of Āndhra Pradeśa sanctioned the sum of Rs. 5000 against the supply of 100 copies, as a subvention towards the publication of this work, for which the author feels obliged.

NOTE III

The photographs reproduced in Figs. 18-24, 29, 30, 32-34 are copyright of the Archaeological Survey of India, New Delhi and those in Figs. 25-28, 31 and 35 are copyright of the Indian Museum, Calcutta and are from the courtesy of the authorities of the respective organizations to whom the author is grateful.

NOTE IV: **TARIMIA**

That part of the Central Asia, which includes the Taklamakan desert, the oases around it and some other tracts in the east, is generally known as East Turkistan or Chinese Turkistan. But these names are not satisfactory from the standpoint of the historian of the Buddhist art created in that part of the world or for that matter even from the standpoint of the general culture, as a whole, of the period of pre-Turkization, for neither Turks alone were responsible for that art and culture nor the Chinese have anything to do with it whatever may be their disputable political claims related to that period. Being surprised at the nature of the archaeological discoveries made there, Aurel Stein has given a new name, Serindia to it. Had there not been the name, Indo-China prior to this, he might have adopted it to this region. In spite of the cultural influences from India and China there is no justification to adopt such a name, because this ignores the land or its inhabitants who created that art and culture, which in their turn influenced China considerably and India to a some extent. There must be a neutral term to indicate that region. Only there are a few tracts in the east which are not covered by the system of Tarim river, irrespective of the question whether all the tributaries are still flowing or dried up. The area of undivided India, in which the river Sindhu and its tributaries flow, is several times smaller than the rest of area. When this vast area could be called India after the river Sindhu, there is then every justification to name those parts of Central Asia after that life-giving river, Tarim. Hence we coined the word **Tarimia,** and used it in this text, even at times without adding East Turkistan in the brackets. We ourselves are convinced of its justification and soundness of this coinage, and even decided to use it in the works we plan to write on this art in near future, provided that there are no serious objections against it. Hence we will be obliged, if scholars kindly communicate to us, if there are any criticisms or serious objections against it.

K. M. Varma

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

CONTENTS

	Page
Hints to Pronunciation of Indian Words	xii
Addendum and Corrigenda	xiii
Preface	xv
Foreword	xxiii
Introduction	1
Chapter I	
A General View of the Sevenfold Construction of a Clay Image	7-10
Vocabulary	7
Metaphorical Explanation of the Seven Materials used for a Clay Image as the Seven Elements of the Human Body	7
The Order of Employment of the Seven Materials indicated in the Metaphorical Explanation	9
The Twofold Nature of Each of the Seven Materials	9
Chapter II	
The Process of the Preparation of Astabandha	11-12
Explanation of the Word *Aṣṭabandha*	11
Varieties of *Aṣṭabandha*	11
Materials employed for its Preparation	11
Chapter III	
The Process of the Preparation of the Ropes	13-18
Material employed for making Ropes	13
Nature and Sizes of the Ropes	13
The Number of Ropes	17
Chapter IV	
The Process of the Preparation of the Clay	19-23
Varieties of Clay	19
The Twelve Stages in the Preparation of the Clays	20
Chapter V	
The Process of the Preparation of Sarkarakalka or Lime-Stone-Paste	24-29
Meaning of the Word *Śarkarā*	24
The Places where *Śarkarās* should be obtained	26
The Other Materials to be added to the *Śarkarās*	26
Chapter VI	
Selection of Wood for the Construction of the Armature	30-34
List of Trees of suitable Wood	31
Defects and Virtues of the Wood	31
Classification of Trees as Male, Female and Neuter	32
The Seasoning of the Wood	33

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

Page

CHAPTER VII

THE SYSTEM OF MEASUREMENTS AND PROPORTIONS OF THE HUMAN BODY 35-41
The System of Measurement 35
Proportions of the Male Figure 39
Proportions of the Female Figure 40

CHAPTER VIII

THE SULALAKSANA OR THE PROCESS OF PREPARATION OF THE COMPONENT PARTS OF THE ARMATURE 42-60
Explanation of the Word *Śūla* 42
Explanation of the Names of the Different *Śūlas* 42
Measurements and Description of the Different *Śūlas* 44

CHAPTER IX

CERTAIN PROBLEMS CONFINED TO THE SULAS OF THE ARMATURE OF THE FEMALE FIGURE .. 61-63

CHAPTER X

THE SULASTHAPANAVIDHI OR METHOD OF ASSEMBLAGE AND INSTALLATION OF THE ARMATURE .. 64-79
Prerequisites of all the Postures 66
Problems related to the Armature of Standing Figure 67
Problems related to the Armature of the Seated Figure 71
Problems related to the Armature of Reclining Figure 73
Further Problems of the Armature in General 75
Some Remarks on the Virtues of the Armature 77

CHAPTER XI

THE METHOD OF EMPLOYING THE VARIOUS MATERIALS 80-94
The Method of applying *Aṣṭabandha* 80
The *Rajjubandha* or Method of tying on the Ropes 80
The Method of applying Clays 86
The Method of using Lime-Stone-Paste 87
The Method of pasting the Cloth 89
The Method of painting the Colours 90

CHAPTER XII

THE TECHNIQUE OF POLYCHROMY ON IMAGES MADE OF VARIOUS MATERIALS 95-108
The Importance of Polychromy 95
The classification of Polychromatic Images 96
The Technique of Polychromy on a *Mṛd-garbha* 99
The Technique of polychromy on a *Śilā-garbha* 99
The Technique of Polychromy on a *Dāru-garbha* 101
The Technique of Polychromy on an *Iṣṭakā-garbha* 101
Reliefs and Polychromy 102
Lacquer Work 103
The Methods of Repairing coloured Images 103
The Development of Polychromy 104
The Age of Polychromy 106

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

CONTENTS

	Page
Chapter XIII	
The Archaeological Account of the Clay Modelling	109-191
The Problem of Nomenclature	109
Problem of Original or Accidental Terracottas	114
General Remarks on Gandhāra and Indo-Afghan Schools	121
Beginnings of different sculptural Media in Gandhāran and Indo-Afghan Schools	130
Reasons for the Dominance of Clay and Stucco in Indo-Afghan School	134
Alliance of Clay and Stucco and the Principle of their Use	135
Employment of Combined Media and the Size as a Factor for Selection of Technique	135
Relative historical Importance of Clay	135
Technique of Unbaked Clay Images as revealed by the Archaeological Finds	136
Armature	137
The Problem of Dowel	141
Neither Straw nor Ropes are reported	145
Preparation of Clays	146
Method of Application of Clay	150
Cast Heads and the Problem of their Attachment	154
Ways of Fashioning Ornaments and similar Items	157
Polishing of the Surface of Images	164
Application of White for Grounding	165
Application of Colours	165
Methods to determine the Effects of accidental Firing of originally Unbaked Clay Images	170
Further possible Contribution of the Clay Modelling	175
Chronological Aspects of Images discussed	177
Fondukistan	178
Ushkar	179
Fondukistan and Ushkar as starting Points	181
Akhnur	183
So-called Shāhi "Terracottas"	184
Comparison between the Textual and Archaeological Accounts of Unbaked Clay Modelling	188
Chapter XIV	
The Present Practice of Unbaked Clay Modelling	192-221
The Tradition of Clay Modelling is still alive	192
Technical Details of the Modern Practice	195
Back-frame	195
Minor Supports	199
Straw Core	201
System of Measurements	203
The Work in varieties of Clay	203
Modelling of the Head along with the rest of the Body	204
Method of Modelling the Heads separately by Hand	204
Method of Casting the Heads	205
The Preparation and Employment of the first Clay	208

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

CONTENTS

	Page
The Method of Joining the Head	208
The Preparation and Application of the second Clay	210
The Preparation and Employment of the third Clay	211
Pasting of the Cloth	211
The Ways of shaping Emblems and Ornaments	212
Medium added to the Colours	213
The Preparation of Ground for colouring	213
Application of the Colours	214
Coating of Varnish and similar Liquids	214
Other Decoration	215
People Traditionally practising the Clay Modelling of Unbaked Technique	215
Comparison among different Practices	216
Some Views on the History of the Practice of Unbaked Clay Modelling in Bengal ..	218
CHAPTER XV	
HISTORICAL ASPECTS OF THE TECHNIQUE OF UNBAKED CLAY MODELLING	222-245
Problem of Development	222
Chronology as known from the Archaeological Finds	225
Chronology as suggested by the Literary Sources	225
The Question of Foreign Influence	230
Graeco-Roman Traditions	231
The Relation between Indian, Central Asian and Far Eastern Practices	234
The Indigenous Origin of Unbaked Clay Modelling	236
Antiquity of the Technique of Unbaked Clay Modelling in India	239
EXCURSUS ONE	
THE GANDHARAN AND INDO-AFGHAN TREATMENT OF DRAPERY IN RELATION TO THE EARLY AND CONTEMPORARY SCHOOLS IN THE REST OF INDIA	246-256
EXCURSUS TWO	
DIFFERENT ANATOMICAL ACCOUNTS IN THE EARLY LITERATURES	257-264
GLOSSARIES AND INDICES	
GLOSSARY A AND INDEX: Technical Terms and the kind	265
GLOSSARY B AND INDEX: Names of Trees in Sanskrit	272
GLOSSARY C AND INDEX: Names of Plants, Spices and Other Substances related to the Unbaked Clay Technique	273
GENERAL INDEX I: Words of the Languages other than English: Sanskrit, Pāli, Northern Indian Languages, Bengali, Hindi, Tamil, Telugu, Arabic, Chinese, French, German, Greek (ancient), Italian, Latin, Russian	273
GENERAL INDEX II: English and some other Words	276
CLASSIFIED INDICES	286-293
1. Botanical Terms	286
2. Museums and Departments	287

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

CONTENTS

	Page
3. Geographical Names	287
4. Names of Gods, Semi-gods, etc.	288
5. Names of Religious Personage	289
6. Names of Historical Personage	289
7. Names of Persons Who helped by Giving Information	289
8. Names of Ancient and Modern Authors to whose Names or Works a mention is made without Reference	289
9. Names of Ancient Authors Whose Works are referred to	290
10. Names of Modern Authors Whose Works are referred to	290
11. Names of Different Classes or Branches of Learning	291
12. Works mentioned with full Titles without giving any References	291
13. Works with full Titles to which References are given	291
14. Works referred to with Abbreviated Titles	292
BIBLIOGRAPHY	294-300

PLATES

LIST OF ILLUSTRATIONS	302-309
INDEX OF ILLUSTRATIONS	310
PLATES	I-XXII

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

HINTS TO PRONUNCIATION OF INDIAN WORDS

The sounds of English words, given here as examples, do not always exactly correspond but they are an approximation.

Simple Vowels

a, i and u	are always short when there is no stroke above them, e.g. a like a in stomach, i in did and u in put.	ā, ī and ū	are long, e.g. ā in father, ī in double e in green and ū like double o in moon.
		ṛ	like ri in cricket (slightly vibrated).

Diphthongs

e and o	are always long (except in some South Indian words), e like a in brave and o in over.	ai	like i in mind.
		au	like ou in ground.

Consonants

k	like k in kind.	ṅ	like n in finger.
g	like g in go.	ñ	like gn in the French ligne.
c	like ch in church.	ṇ	this is purely cerebral and so there is no similar sound in English.
j	like j in jar.		
ṭ	like t in it.	n and m	are the same as in the English word, name.
ḍ	like d in did.		
t	like th in ethnology.	ṃ	is a nasal sound and pronounced along with preceding vowel, but not as in French.
d	like th in though		
p	like the second p in the first syllable of pepper.	y	always like y in young.
b	like b in bamboo.	v	like v in vast.
	All these ten consonants are also aspirated in which case these are written kh, gh, ch, jh, ṭh, ḍh, th, dh, ph and bh. As in English, the aspiration does not follow these letters, but is pronounced together with them. Here it should be noted that ph is a pure labial sound, not labio-dental, as in English, e.g. in philosophy.	r and l	are like r in frame and l in language, but these are never reflexive sounds.
		ś	like s in sanction (but more palatalized).
		ṣ	like sh in fashion.
		s	like s in sound (pure dental).
		h	like h in hand.
		ḥ	unlike the above, is unvoiced and pronounced along with the preceding vowel.

NOTE

For the lack of necessary fount it was not possible to use the diacritical marks with capitals and small capitals, i.e. mostly in chapter titles, subtitles or headings, although the transliteration in those cases too is not changed. For the same reason it was not possible to transliterate certain words very accurately, though printed in lower cases, for instance Bāṅkuḍā, in which the first *a* is nasalized *a* (*anunāsika*) and *ḍ* is slightly reflexive, as probably is the case with *r* in Mohrā of Moharā Morādu, and also was not possible to indicate the short e and o occuring in the South Indian words.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

ADDENDUM

Read the following as the continuation of the first paragraph (i.e. after the word kiln) in p. 144.

The matter that the second method is practicable is clear from the common sense point of view and that it has been in actual practice is evidenced by a real terracotta figurine reproduced in Fig. 35. A triangular piece executed with the same clay as an extension in the neck area to serve as a dowel, is visible in it, because the rear area of the figurine is broken. It clearly indicates that the modellers have been very much aware of the technical complications that might arise, if the dowel of any other material were employed, for in that case one has to create a hole in the core of the head and then has to cement the dowel in it by some means, and so on. The front and back halves of the trunk seem to have been at first modelled in thin layer, which were then joined together. The result of this device is the big hollow in the trunk into which the triangular clay dowel has been pushed or simply placed, and then the joint has been fixed by adding some clay at the rear of the head and neck and also at the upper part of the back. Then finally the figure has been fired in a kiln. It is possible to adopt the same method, even if the trunk is modelled solid by creating a necessary hole to serve as a mortice to the clay dowel or tenon.

CORRIGENDA

As a general rule it would be regrettable, if for whatever reasons any mistakes occur in a text. People add the errata in obscure places, which is very funny, because they should attract the reader's attention so that he may take necessary care. Hence the errata, so far discovered while preparing the indices, are added here at the beginning without implying by it any guarantee that there are no more errors. We would be grateful, if the reader takes further care and kindly communicates us the mistakes, if any.

Plates

Figs. 22 and 23 are in interchanged positions while their captions are in correct places, hence the question mark is added after these numerals within the brackets whenever these Figs. are referred to in the text or in the notes.

Frontispiece, Caption: not Birbhūm, but read Bīrbhūm.

Abbreviations

p. 15, line 2, read S.E.D. instead of E.S.D.
p. 106, note 33, line 3, read As.S. instead of A.S.
p. 107, ,, 35, ,, 1, ,, A.In. ,, ,, A.I.
[but I.Ś.P. (p. 29, note 16) and I.S.P. (p. 106, note 32) are not incorrect]

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

CORRIGENDA

Title of The Book

p.	*Note*	*Line*	*Incorrect*		*Correct*
2,	4,	3,	not *Haribhaktavilāsa,*	but read	*Haribhaktivilāsa.*
23,	18,	8,	,, ,,	,, ,,	,,

Others

p.	*Line*	*Incorrect*		*Correct*
xii, col. 2,	1,	not *ī* in double e,	but read	i like bouble e.
13,	11,	,, refering,	,, ,,	referring.
26,	12,	,, Philanthus,	,, ,,	Phylanthus.
38,	21,	,, *medhramūla,*	,, ,,	*meḍhramūla.*
56,	3,	,, *Kāsyapajñānakāṇḍa,*	,, ,,	*Kāśyapajñānakāṇḍa*
111,	37,	,, nay,	,, ,,	may.
122,	28,	,, inconographic,	,, ,,	iconographic.
164,	18,	,, slim,	,, ,,	slime.
241,	22,	,, possibly,	,, ,,	possible.
263,	15,	,, anolcgy,	,, ,,	analogy.
272, col. 3,	1,	,, at time,	,, ,,	at times.
276, col. 3,	2,	,, Κα′νναβος	,, ,,	Κι′νναβος.

Words With Either Unrecognizably Broken or Fallen Letters

p.	*Note*	*Line*	*Words concerned*
225,	3,	14,	details.
226,	4,	5,	image.
,,	,,	6,	to.
242,	—	10,	in.
247,	—	11,	without.

Bibliography

(The following mistake has taken place after the print order is given)

p. 297, line 7, **read** *INNERMOST ASIA* instead of *Innermost by Asia.*

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

PREFACE

According to one's inclination, one may take up this or that aspect of art, or of any other subject, for study, but one should not err by considering the given aspect to be so great as to form the whole by itself. Nonetheless it is also true that all the aspects may not be of the same value. In the field of art the aesthetics and technical aspects are very important, for the former is the essence and the latter, being an integral part of the form, is the bearer of that essence. They are then the basic requirements of art history, and it is all the more necessary to concentrate first on them in India where art history has not yet been developed. This is the view held by this writer for a long time and his endeavours have been directed towards this goal. Of those endeavours the present attempt is the one, which may be explained now.

This study, strictly confined to the technique of unbaked clay modelling, is based on three, but only possible major sources, viz. i. ancient theory found in Sankrit *Āgama* texts, ii. the past practice in the form of the archaeological finds and iii. the present practice as seen in Bengal. There has not been even a single article by others dealing with the subject on the basis of any of these three sources, let alone a comprehensive book as this. Pioneering also are certain other aspects introduced here. Many academic and technical aspects have been consciously thought out in detail and kept in view all along while writing this study, and at the time of its production. For lack of space only a few of them may just be touched at proper places in the following paragraphs, though even this makes the preface unusually long.

The very existence of unbaked clay images that came to light in the archaeological works was, paradoxically enough, largely unknown to the archaeologists themselves, not to speak of others. This is for two reasons: misnomenclature and misguiding factor, viz. they were burnt to terracotta by later accidental conflagrations. The ground for the subject proper was, therefore, to be prepared by showing the existing confusion in using the terms: stucco, terracotta and clay figure in place of one another. Since originally unbaked clay pieces are now mostly in the baked condition, certain methods and means were to be expounded to determine their original nature. As far as the past and present techniques proper are concerned, there is nothing to be brought to the notice of the reader at this point.

Certain aspects related to the study of ancient treatises on art and crafts, generally known under the name *Silpa* texts need be mentioned here in some detail. It is most desirable, if art could be studied knowing the mind of those artists, of that folk, and of that culture, who created it, instead of reading somebody else's ideas into it. If there are any ancient written records, especially in the form of treatises, they will certainly prove themselves to be the easiest aids for such a proper study. India is generally said to lack the historical records, and that is true to a great extent, if the chronicles and the like are meant by it. Treatises also are a kind of historical material, though one may not be able, quite often, to decide the chronology on their basis. Most fortunately India possesses a huge number of ancient treatises, some of them are even excellent, and it is doubtful, if any other culture has richer treasures. Over and above, the contents found in them go hand in hand with the actual creations. What better ground one needs to undertake the study of such texts earnestly? If for historical reasons certain difficulties arise by way of their interpretation, that does not rob away their importance. But the most unfortunate thing is that no sufficient attention has been paid to them, as is obvious from the fact that not even an insignificant fraction of them have been explored up to now, although this study was started with Ram Raz's *Essay on the Architecture of Hindus*, published in 1834 (London).

While explaining the condition of art history in this country Charles Fabri observed (*Cultural Forum*, January 1964, p. 98 ; Ministry of Education, Govt. of India, New Delhi) that the *Śilpa* texts bear "no relationship to the actually extant works", and in this connection he also mentioned, as his support, that Nihar Ranjan Ray was of the same view. Fabri, Ray, and some others, whose numbers are on the increase nowadays, belong to a club of self-styled intellectuals, talking, almost all the time irresponsibly, on the subjects they hardly know. To none of them originals are accessible, and if they have ever

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

seriously paid any thought to such matters is open to question. Hence, such statements from them are entirely uncalled for. Fabri was a journalist or a columnist, and his style had been the same even when it was connected with his activity in the Lahore Museum. But some of these persons have been in important positions and this fact explains, to a great extent, why art history has not developed in this country. Ray, for instance, who in spite of doing practically nothing on art or perhaps because of this, held, for two decades or more, the chair of Bāgīsvarī Professor of Fine Arts, the first ever to be created in the field of art not only in the Calcutta University but also in the country. It is after all a position which, with competence and devotion, could create increasingly able generations of art historians. Such men lacking depth of scholarship have been the obstacles to the development, not only of art history but also of a sound academic tradition, and they remain so in the future too, casting, like *Chāyāgrahas*, their shadow, yet advanced studies also are being placed in such hands, to conduct them in a most scandalous way to that term. Such elements may impress the laymen in the Delhi bureaux, but it is to be seen whether they dare to establish in scholarly debates that ancient treatises have no connections with actual past creations. Leaving them at it, it is for the reader to make his own judgements on the issue, after going through this study.

The first twelve chapters of this work, are based on ancient treatises. While making use of them not only have we partly performed the tasks of an editor and a commentator but also some additional ones which neither of them attempt. Hence, we hope the future editors will get much assistance from this study. Our predecessors who worked on the *Śilpa* texts, explained the meanings as far as they could derive from the existing versions, which were defective in many places, but they never raised or pointed out any issues that could not be solved at the moment. On the contrary, pains have been taken here to point out each issue, and the matters that the present writer is unable to explain, are also mentioned with utmost frankness. In fact the whole approach was aimed at two things: to introduce those already acquainted with the nature of *Śilpa* texts to the existing problems of this particular subject and, to guide the beginners by elucidating the ways of the *Śilpa* texts in expounding the subjects. Indeed this is the way to be adopted by any worker, if the study of such texts has to be advanced. All this was done with a hope that future workers would perfect this subject as well as the texts by repeated critical study. Attempts are seldom made to study the *Śilpa* texts, and if once any attempt is made, however inadequate and defective it may be, that becomes and remains a classic for ever. In the present circumstances no attempt can become a classic, whatever may be the eminence of a given worker. It would be the most pity, if, in spite of all our afore-said efforts, the present study is left as it is without making further attempt to perfect it.

Never before an experiment of creating the object or the objects according to one's own study has been made in order to illustrate different aspects of the subject concerned. This has been done here, as seen in the accompanying first 17 Figs. The same Figs. establish that the texts were the faithful records of the actual practice and, hence the subjects discussed in them are practicable too. Some difference exists between the theory of this kind and actual practice, for the theory was based on the general conclusions reached at and the objects created were individuals. This does not and cannot minimize the importance of the treatises. Ignorant intellectuals, however, need the lessons on such questions for a couple of years.

Coming to the problem of translation of the technical terms, some of them create difficulties and some others sound peculiar in a different language. That apart, all of them are intentionally repeated throughout, without accompanying translation, to get the reader habituated to them, for it is a need of the day in India. Foreign readers (who are not Indologists) are not handicapped, for comprehensive glossaries are added. Glossary A, contains only the technical terms or the terms having similar shade of meaning, and as such it differs from the glossaries, generally added to the books on art, for the latter are of general nature. Very seldom the technical terms of art are entered in the modern dictionaries. Glossary A may be conveniently utilized by the workers on dictionaries with necessary care. At the proper

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

place it has been pointed out where and what kind of care is necessary, but it may be mentioned here that it is better, if they read the individual words in the context before accepting them.

Excursus Two indicates a new field of investigation, though not related to art, at least directly. The subject of Excursus One, is important to art, but what has been stated there is similar to small poles posted in line in a thick forest to help the future construction of a metalled road. Nevertheless it is a first attempt to study the drapery on the basis of the artist's procedure of executing it, and this method will certainly yield valuable results, irrespective of the question how many of the present conclusions remain valid after a detailed study is made.

Another effort consciously made here relates to the nomenclature. Some pseudo-philosophers in this country may think that they alone know the problems of language, but that is a failure of understanding of the scientific work as such, a deficiency shared by the most of the scientists in this country. Issues connected with the language in the form of terminology is a problem to every discipline, and it is to be solved according to the needs of a given discipline. The word 'statue' really means a figure of considerable size and particularly meant for commemorative purpose. But it is currently used, not only in English but also in other European languages, to indicate even the images of gods. There are persons who invariably correct it, if it is employed in the latter sense, and if you go to some English man he may dismiss the correction, calling it nonsense. If a collective term is necessary to imply all sorts of figures, difficulty arises, for the word 'imagery' is confined to literature with a distinct meaning. The word 'figure' has no such form, and the term 'figural' is generally not used, though grammar allows its formation, but even then it can only be an adjective. One has, therefore, no other choice than adopting the term 'statuary'. 'Addition' and 'removal' are different and reversal processes, and the verbs 'to model' and 'to sculpture' indicate them. Then the appropriate nouns would be 'plastic' and 'sculpture' to indicate the figures made in these processes respectively. This distinction is maintained in German and Dutch, etc., and the authors from these countries are nowadays employing two words distinctly when they write in English; the plural, 'plastics' would, however, not only sound strange in English but also according to current usage it denotes certain synthetic materials. But for English everything is sculpture, though etymologically it means the figure made by way of chiselling out, for *sculpere* in Latin means to chisel. The English may call such distinctions nonsense in self-defence or in the name of modern usage. But to maintain such distinctions is necessary in scientific work, and one must have, therefore, appropriate terminology, whatever language it may be. It may be pointed out that we have tried in this work to avoid this indistinct usage only as far as possible, but we have not strictly maintained the distinction, which needs a greater effort than we are expected to make here. This shows that also some of the European languages considered to be richer — no doubt richer in many, if not in all modern disciplines — lack certain things, and the English have muddled the use of those words too, which have distinct connotations. This is perhaps partly owing to the fact that art history has been in a much less developed state in the English speaking countries. Anyhow it is still ridiculous that English speaking peoples from both sides of Atlantic call clay images as stuccos and mention the terracottas also as pottery images and earthenware sculpture, as has been amply pointed out in this text. Indian archaeologists inherited all this from the English. As far as this class of words go, we have strictly maintained the distinction, and in fact it has been our task to remove this confusion.

There has been some reason behind each of the changes made in the transliteration of the place names, but for want of space those reasons cannot be explained here. Yet, in many cases, these changes are only half truths, for it is a long way before we can get correct forms of these names. Some indices have been introduced, as we believe, for the first time. Of these, the Index of Illustrations, and of the Texts — both, with titles in full and in abbreviations — are important, for, as is hoped, the future workers may find them useful not only for consulting the relevant pages in this book but also those of the works of others.

All the three varieties of cards are not prepared even in those libraries, which are probably in minority, where there is a bit of habit of writing cards. Hence it is thought useful to supply a set of three

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

cards along with each copy of this book. Although all the three are printed in the same form, they are meant to serve as author's, title and subject cards and to be kept in the respective shelves. This form makes it superfluous to write three cards in three different forms as the (unpractised) convention prescribes. Each card supplied here, contains not only more information than all the three cards written according to the convention, would together give, but also almost all the bibliographical information. The card which is going under the name subject card in the libraries is not subject card, when viewed from the reader's standpoint. Hence every detail of this form is thought out in terms of reader's convenience. He can get all the information in it, in whichever shelf he may see it, without going to the other shelf. Judged from the present trend, there is no hope that in foreseeable future the librarians do their duty fully. Specialized bibliographies are very much in want in this country. It seems, therefore, useful, if the authorities make it obligatory to the publishers to supply a set of at least three printed cards with every book, excepting those meant for school boys. This can be done linking it with copyright, of course after taking safegaurds against redtapism. Once a form is accepted along with explanatory note and made it known, any publisher or printer can prepare the card, except the specification of the subject, which either the author or the editor can do and communicate it to the publisher. A set of three printed cards costs, depending on material, not more than 50 to 75 Paise, if sold on commercial basis. This would be, according to the miserly estimation, one fourth or even less than the cost that comes, if the cards are prepared in a library with the same details. One can see now what is the national gain from it.

With the intention of submitting it as a doctoral thesis to the Philosophical Faculty of the Freie Universitāt, Berlin the typed script of this work — running a little over 400 pp. and consisting of 16 chapters — was made ready by May 1960. But in view of the fact that this would incur great expense, only the first half, comprising the first eleven chapters (about 200 pp. in type and now pp. 1-94 in print) was ultimately submitted. After the successful completion of the examination on the 15th Feb. 1961, the German version of the same (see I.T.T., in Bibliography) was published by the middle of that year. That part of the text remains, now too, the same as it was in the German version, except a few additions and alterations, both small, in size, and minor, in importance, save two or three, which are related to the modification of our views in the light of new materials. Hence attention has been drawn to them in the respective places. The rest of the alterations are found here and there, mostly in the footnotes, but neither these alterations nor the additions are so important as to be enlisted here.

Since the second half — from chapter XII onwards — has never been published in any form, there is no need to report the improvements made according to new materials which we come across during these ten years. A few points, however, may be mentioned. Chapter XV of the above-mentioned typed script was devoted to the Central Asian practice, which was meant for a comparative study, and hence it was rather sketchy. Later we worked nearly for five years in the Museum für Indische Kunst, Berlin (formerly Indische Abteilung des Völkerkunde Museum) on the Central Asian art, particularly on statuary. We have now sufficient material on hand and also have plan to write an independent book. This chapter was, therefore, altogether dropped, and as a result the XVIth chapter of the former version now becomes the XVth chapter. This five years of study of the originals, though related to Central Asia, gave us an insight into the clay modelling, which helped us in reading, with confidence, the details of the Indian practice from the photographs which we selected (December 1966) from the Albums of the Archaeological Survey of India, New Delhi. The need arose to recast the chapter XIII (which was already enlarged once in 1962), incorporating so much new materials which increased the typed pages from original forty (that too along with many details of stucco technique) to one hundred and seventy.

In the proof stage we have checked all the references, except those related to the literature on the Graeco-Roman art (i.e. in Ch. 15) and some of the Mémoires de la Délégations archéologique Française en Afghanistan (i.e. in Ch. 13); these are not available even in Calcutta. If there are any discrepancies in these cases, they are not for the lack of effort on our part. Scholars may kindly take note of this fact.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

PREFACE

A decade — including the period of two and a half years, when the MS was in the press — is too long a time for the publication of any work, when it is in itself a complete one. If meanwhile the work could be enlarged with newly collected materials, it would be a different matter. But this point is only a consolation, as far as the publication goes, for the improvements could be made even if one waits for ten more years. As early as the middle of 1962 the proposal was made to Messrs. E. J. Brill, Leiden, who in their turn approached Frau Prof. Dr. J. E. van Lohuizen de Leeuw. After the MS was sent to Leiden, both promised its publication, but as time went on it became increasingly uncetain — though neither of them told so clearly — whether it would be published or not, and if at all it could be, by what time. At the end, i.e. nearly after three years, we had to get back the MS, as may be expected and unfortunately too, in the strained circumstances. We are, however, greatly indebted to Prof. Lohuizen, for her kindness in going through the first twelve chapters, in connection with the same proposal, with so much concentration that she perhaps still remembers them better than we ourselves do.

On getting the news of the grant made by the Govt. of Āndhra Pradeśa we decided to publish the work on our own, in order to impress upon the public and private publishing agencies that all authors are not helpless. We, therefore, had to attend to all the aspects of production, even such technical work as re-touching and covering the background of photographs by means of spraying, etc. It is not a mean task to perform, especially under the utmost trying market conditions. The conditions are trying not because of the lack of material but because of the total lack of order and necessary psychological conditions. The customer is a slave in Indian market, as the academician in the academic institutions. In spite of a couple of unpleasant, yet minor, aspects of the job, this can indeed be considered one of the best productions in the Indian conditions. We have no hesitation to claim this. But a serious student of history of art, willing to work always and capable of producing a bit of useful things, has lost precious two and a half years on account of this. The society has a responsibility and it should take note of this fact. At the same time it is gratifying, despite all the delays and hurdles, that the book has seen the light at long last. Or perhaps one has to feel so to console oneself.

We are aware of what the price of a research work means to a person who reads by purchasing it. In spite of all our good intentions we failed to keep the price lower than the present one, for reasons beyond our control. The grant of Rs. 5000 from the Govt. of Āndhra Pradeśa proved to be, though unintentionally, less than subscription price, for there was a condition attached to it to supply a hundred copies. It may, however, be clarified that they have granted half the amount of the estimate of costs submitted. For reasons of change of our mind with regard to the material, and the increase in the number of plates and pages in course of enlarging the book, the said estimate proved to be very inadequate. Even if the grant were half the cost of production, it could not have helped *much* in respect of lowering the price, as there was a condition attached to it.

Various kinds of help came from several quarters, and I have acknowledged it at proper places in the text, if it is related to the subject matter. By way of acknowledging the same in other forms, I should at first express my heart-felt gratitude to the authorities of the Alexander von Humboldt-Stiftung, Bad Godesberg for granting me a scholarship for a period of 26 months, from November 1958 to December 1960, enabling me to specialize in the history of art in the Kunsthistorisches Institut of the Freie Universität, Berlin, when I completed this work in the form described above to have taken by May 1960. This grant gave me a golden opportunity to come into the direct contact with the magnificient German academic life and tradition and with a number of eminent scholars of different disciplines. Had they not given me this opportunity, it could not have been possible for me to discuss certain topics which I have included in this work, for instance, the clay modelling in the Graeco-Roman traditions, or for that matter I could not also have utilized some French texts. I must also thank Prof. Dr. Walter Liebenthal and Prof. Dr. Wilhelm Rau, who kindly lent their support to get me this opportunity when I applied for the scholarship.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

PREFACE

My esteemed teacher, Prof. Dr. Hans Kauffmann, the then Director of the Kunsthistorisches Institut of the Freie Universität, Berlin to whom this book is dedicated as a token of gratitude, not only guided me in this work but also rendered all the help needed during the period of study with him over two years and after, i.e. throughout my stay in Berlin for seven years. His lectures characterized by weighty content and exuberant but very much measured language had been inspiring while his seminars had been illuminating. They attracted me for a long time even after the period of the study, which was officially supposed to be ended with the successful oral examination. Insight into art history and its methods is his gift, which helps me also in all my future work. It is impossible to thank him in words for what he gave me in all these ways; hence I willingly remain in his debt, feeling myself to be extremely fortunate to be his pupil. Also Frau Prof. Dr. Sigrid Westphal-Hellbush, the Directress of the Ethnological Institute of the same university and Prof. Dr. Olaf Hansen, the then Director of the Indological Institute of the same university, both being my teachers in the respective subjects as subsidiaries, helped me in studies and in many other ways. I am indebted to them.

Frau Dr. Elisabeth Rhode of the Pergamon Museum, Berlin personally introduced me to the library of the said museum, recommending the necessary literature on the Graeco-Roman art and Prof. Dr. Friedrich Goethert, the Director of the Archäologisches Institut of the said university did the same in his Institute's library. My cordial thanks are due to them. I often used the library of the German Archaeological Dept., Berlin, and in fact I was a permanent guest there. All the members of the Dept. were always ready to help. Prof. Dr. Kurt Bittel and Prof. Dr. Erich Boehringer, the Present and the Former Directors of the same Dept. respectively and their colleague, Dr. Hans Bernhard Jessen, had been the source of encouragement from the moment I came into contact. Their kind help and friendliness are thankfully remembered. Dr. Horst W. Hartwich, the Administrative Head of the Aussenkommission of the Freie Universität, apart from being helpful throughout, granted me a good scholarship for a period of five months, that too, partly with retrospective effect and also partly after the doctoral examination was over. These are the kind of acts which one cannot forget, even if one wants. I offer him my heartfelt thanks. Thanks are due to Frau Dr. Gisela Hanke-Matthes for kindly allowing me to reproduce the photograph of Prof. Kauffmann (on the dedication sheet), taken by her husband at the time of the International Congress of the Art Historians, held in Bonn, in October 1964. I gratefully remember the various kinds of help from Frau Veronika von Below of the Kunsthistorisches Institut and Dr. Mathias Winner, Dr. Carl Heinz Schreyl, Dr. Christophor Thoenes, all of whom were then associated with the same institute, as well as Mr. (now Dr.) Winfried Ranke. My landlady, Frau Lina Schmidt, who very unfortunately passed away recently treated me with motherly affection, which also helped the study indirectly, and I remain in her debt. I am also grateful to Herr Rudolf Glodde for the trouble he took to help me in many ways.

Prof. Santideb Ghosh, the then Principal of the Sangita Bhavana, kindly kept at my disposal a very spacious room in the said college for a couple of months or more in 1966, even at a time when I did not yet join the college, to enable me to make an experiment of a clay image, the photographs of which were reproduced here in Figs. 1-17. This is only one of the many occasions when he generously extended his helping hand to me. I offer him heartfelt thanks for all this. I am grateful to Dr. P.S.R. Appa Rao, himself an eminent scholar, who translated the entire *Nāṭyaśāstra* into Telugu and contributed many other works to the same language, helped me while he was working as the Cultural Officer in the Ministry of Education, Govt. of AP. But for his help it might not have been possible to get the said grant for the publication of this book. Mr. A. Perumal and Dr. Y. H. Jan kindly took trouble of communicating a number of informations in the beginning when I left for Berlin, for which I am grateful to them. My sincere thanks are due to Mr. Bikash Chakrabarty, who patiently went through the typed script from the chapter XIII onwards. Dr. K. K. Sarkar very carefully read the galleys from chapter XIII onwards till the end, paying attention also to the language and I thank him cordially for this friendly gesture. I must also thank Mr. Sitikantha Bhattacharya for some of his valuable suggestions relating to the production and for kindly going through the proofs of pp. 1-63, in all stages but the last one.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

My friend, Prof. Dr. Wilhelm Rau has once read the proofs of pp. 1-108, which at that time were in different stages. He was kind enough to insist on having this trouble for himself, when he came here for a short time at the end of 1968. I owe him, in this case too, as in many others. Thanks are due to Messrs. Golakendra Nath Bhattacharya, Debidas Bhattacharya and Vishnu Guha, who helped me in choosing some of the botanical terms used in p. 263.

My cordial thanks are due to Mr. S. K. Ghosh, the Managing Director of the Calcutta Press Private Ltd. for doing a nice job, patiently fulfilling my wishes. Mr. Sudhansu Bhattacharya of the same house carefully read the first galleys and pointed out, whenever there was an error in the MS. Messrs. Kedareswar Banerjee and Sachindra Mohan Sen Gupta of this press were very helpful. I owe them all my gratitude. Mr. Sourin Das Gupta, the proprietor of the Reproduction Syndicate, took the interest and himself guided block-making and printing. Without his personal supervision the present results could not have been achieved; for this I thank him heartily. I feel obliged to other members of this firm such as Messrs. Prabhat Kumar Singha, Sati Prasanna Sen, etc. for the care they took. Thanks are due Mr. Sachin Basu, the proprietor of the Binding firm, and his colleagues, for giving special care and doing a standard work. Many others also rendered valuable help and I thank them all, though the space does not permit to mention so many individual names.

College of Music and Dance
Śāntiniketan
1st August 1970

K. M. VARMA

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

FOREWORD

This foreword has nothing to do with the present book, though the history of Indian art as a discipline is its theme. The care is therefore taken not to tax the prospective buyer of this book in terms of silver for these few pages. It should also be noted that it is primarily meant for the Indian readers and for the others too, if they are interested in the topic.

The State of Art History in India

The attempt to study art in India should be considered to have started with the archaeological explorations by the British in the early decades of the 19th century, irrespective of the question whether those explorations were stray type or planned ones. This means that the trend took place more or less in the period when the foundations of the history of European art, and through that also the history of art as such or as an independent discipline in its modern sense, were laid in Germany by Jacobo Borkhardt. Savants in European continent have meanwhile developed it to such heights that it is impossible to see its highest peak by standing in European continent. Whereas its progress in India is not worth mentioning. This is partly or for that matter to a great extent due to the fact that the English have not sufficiently participated in the movement of European art history, and this is true in spite of a well-known figure like Ruskin or one or two more of his kind. As a result the English have remained backward in this respect, even till today. It cannot be then expected from them that they should have introduced it into India. Speaking from Indian side, it should be noted that there have been many internationalists in India, to whom the English are the Muses, then it is futile to expect that they should have themselves realized the importance of this subject and taken the necessary steps. As a matter of fact, the English speaking peoples in general have been less advanced in this respect, though the Americans have been lately paying attention to this subject. On account of this the English language also has not helped India in this respect, though it has been the medium of instruction and of most of the scholarly work. As a result of all this, art has remained the sole concern of the archaeological departments.

Archaeology by nature is a conglomerate of many subjects, hence, men working in the departments should possess a specialized knowledge of one or two subjects in addition to the general acquaintance of all the subjects required, and the specialists should deal with specific aspects. On the contrary, men with two years' master's degree in the political history have become the priests of the archaeology. This is a very unhappy thing, though there have been several eminent archaeologists among the Indian nationals. Hence it is meaningless to defend this situation by taking the names of those eminent scholars. It is gratifying that this historian's archaeology became, at long last, the object of ridicule, and steps were taken in some universities and also by the Archaeological Survey of India itself by starting a school, although these steps too do not seem to be fully satisfactory. Archaeological Survey of India is, administratively, a sole authority in the country in the matters concerned, yet organizationally it has been in a bad shape in several respects, apart from the fact that the funds given to it are too inadequate. This is basically an academic department, as such it should be given autonomy. Even if it is not possible to do so for one reason or the other, at least it must be governed by different rules than those binding to the members of the general civil administration. But the British saw no difference between an archaeologist and a police constable, and turned the archaeologists into officers. After independence these matters should have been looked into. The sadest part of this story is that our archaeologists, instead of aspiring to become the first rank scholars, themselves feel proud of their being class one or class two officers, even today. The circle superintendents have to attend to every aspect in his circle, and the monuments are suffering the most because of this, in addition to the lack of funds for proper preservation. The same superintendent, generally excavates the sites, but he himself has to attend even to such trivial matters as disbursing the wages to the daily workers at the end of each day. To whatever extent one's methods may be scientific, one cannot put everything on paper, and there are many things which the human brain alone can register,

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

but unfortunately the same organism cannot hold all minor aspects for ever. In spite of this universal truth the excavator is not given the chance to write the reports immediately, and for want of time he often attends to writing report and completes it years after, i.e. when many details have been forgotten. This is the most depressing aspect of the present functioning of the Dept. In addition to it often the reports are published ten or fifteen years after they have been submitted, waiting for the green light from the secretaries in the Ministry of Education. There could be rivalries among the persons concerned, and all this redtapism gives a golden opportunity to those who are in high places to deprive others. Although not easily verifiable, it is an open secret. There are thus many organizational changes, which should be brought in, and if their being Govt. servants prevents the concerning persons from suggesting these changes, the public can at least demand the publication of the reports within two or three years after they have been submitted.

All these have a bearing on the question: why art history has not developed in this country. Because of the lack of specialized knowledge the archaeological Dept. has contributed very little towards the art history and it should be pointed out that the reports on the objects of art discovered are different from their historical study. If the archaeologist strictly adheres to his discipline, he can in fact contribute nothing towards art history. For him art too is a source for the reconstruction of human history, as any other object left by the past generations. In other words, art is a means to him, whereas it is the centre of interest for art historian. These two are quite different engagements. Hence one need not expect much from the archaeologist in respect of art history. For historical reasons, art cannot, however, be fully separated from the archaeology, even after a century, if the excavations are conducted with the present tempo, because a vast wealth is still in the womb of the earth, and the archaeologist has to bring it out. But the historical study of art need not be linked with archaeology, in fact there is no natural link between them. Hence the archaeologist should put the art objects in the hands of art historian as soon as he unearths them. Precisely for this reason, there is no point in placing the responsibility of preservation of art monuments with the Archaeological Dept. as part of its various functions. This is an academic point, apart from the practical aspect that because of various activities the Archaeological Dept. has been unable to look after the monuments properly. Hence a separate Dept. of the Preservation of Monuments should be started.

Coming to the other possibilities, it should be noted that there was a period of hope for the gradual development of art history, when a movement took place in Calcutta in the twenties and in the first half of the thirties of this century, and for the sake of convenience this period may be named after the famous learned journal, the "Rūpam Period", though it was published only for a decade, i.e. a little less than the time mentioned above. This awakening, though short lived, led to the inclusion of art as a special group in the course of ancient Indian History and Culture (for two years, as if the entire art history could be mastered within this period). Though as a first step this attempt was very novel at that time, it remained growthless partly owing to the unimaginative academism and to a great extent on account of the fact that the headship went into inefficient hands. This was imitated in Banaras. In other universities the study of art is made a part of general history, but in a much smaller scale. Thus the art history is made a part or a small part of the general political history, which has hitherto been the fountain-head of archaeology too, and hence it is not taught as art history should be, but in terms of the chronology based on the battles waged by kings and emperors. The men of political history also treat art as a source of general history, for which there cannot be any objection, if they do not boast themselves to be the sole authority on the subject. The most of these great historians, excepting a very few, even do not know the basic fact that art history is constructed in terms of the evolution of the form or formal elements, which evoke the aesthetic feeling, and as such it is entirely a different discipline from the political history based on the dynasties or the activities of those having political power. For the lack of this basic training these men cannot analyse a piece of art and explain it. If art is to be included in the courses of ancient history and culture, what is the reason for it? Art alone does not form the whole culture, even if the latter is understood in a very narrow sense. Then how much do these great historians know about drama,

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

music, dance or for that matter even *sāhitya* (minus drama)? They do not know anything of these, because there are no inscriptions on them. Then it exposes them utterly. If the art historian needs some knowledge of political and religious histories, epigraphy, etc. taught in these history departments that does not change the situation. Hence it is a question of approach, and the political historians very much lack this approach, for that matter they do not even know it. Coming to the recent attempts, it should be noted that a few years back an MA course with art history was started in Punjab University, Chandighar, not as a part of general history, but as a fullfledged subject. A mania of misconceived internationalism and of modernism manifested in many fields in the country at present is strongly at work in this case. Two years is too short a time to specialize even a part of Indian art, and it goes without saying that one cannot learn even a b c of the arts of other cultures, if they are included. According to our information which is of course three years old, the civil engineers in that city were entrusted with teaching of architecture, and the similar arrangements were made in the case of sculpture and painting. Although such arrangements were said to be temporary until the "qualified" staff was recruited, this reveals how light-heartedly studies are organized in Indian universities. Serious men could have tried to get at least a minimum number of proper persons at first and then started teaching. Coming to the nature of course, even though the courses offered in the Calcutta and Banaras Universities and the like are deficient in proper approach, they would certainly provide some academic basis to the students; but the course introduced in the Punjab University and the like fails in this aspect too. Of course it can turn out what are called pretentious critics who write in newspaper columns.

With the introduction of so-called degree courses in the schools or colleges of arts and crafts, a tendency has developed in recent years to teach something regarding art. What this something means is a problem. Although these are not the centres where art history as a discipline is expected to develop, yet it can be properly utilized there, if concerning persons have clear notions about it. The hotch-potch courses are fixed by men who do not even know the distinction between art theory and art history, and this something is taught often by not very competent hands.

All this has a bearing on the literature on art produced. Actually there are no art historians in this country. It does not imply that the writers on art do not have the data. Many writers have them in a better way, for the teleprinters and computers are found till today only in big cities like Calcutta, Delhi, etc. and even there is no hope for their reaching to rural areas. Ananda Coomaraswamy is an Indian only by name, for he did not get his education in India nor did he work in this country. In spite of his strong nationalism he was wise enough not to come here to become a slave to a mediocre Vice Chancellor, if he had worked in a university, or to a highly literate but utterly uneducated secretary or administrator, if he had worked in any museum. In fact even among European writers on Indian art there are very few who are art historians by training, such as Dr. Stella Kramrisch, or Prof. Kühnel, though his field is not quite closely related to Indian art as a whole. This applies even to Coomaraswamy, an unusual phenomenon—a trained geologist turned into an eminent art historian. Still European scholars were able to write many standard and useful books, for they were brought up in an atmosphere where the art history was very much studied; hence they were acquainted with its methods to some extent. Dr. Kramrisch came to this country with devotion, but no chance was given to her to develop the discipline. Of course she taught, but according to the guidelines put before her. She spent all the best years of her life here to receive only humiliation at the inferior hands, and among the colleagues with high brows for their being able to read the Maurya script, although unable to understand her methods and hence believing her to be deficient in her English knowledge. This country has produced up to now only iconographers, that too descriptive iconographers. This is because the concerning scholars are more inclined towards religion. Such an inclination turns the art into a source for the study of religion, whereas the iconography should be studied as one of the several aspects of art in the field of art history. The objection is that this kind of iconographers are passing as art historians, which is an illusion. This is not to lower the values of either iconography or the contributions made by the scholars devoted to the field. When art history is considered to be a discipline, the iconography is indispensable but not im-

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

portant. There is another kind of literature which has been produced in recent years, and this is devoted, to a great extent, to the miniature painting. All this is supposed to be a very delicious dish, but it lacks salts; it lacks the theoretical basis very much. Theoretical basis does not necessarily mean adherence to this or that ancient text, though that can also be a theoretical basis. People do not seem to have certain criteria or clear notions of basic factors. This is felt even in connection with the literature on Indian art being produced in the western hemisphere for some time. You may disagree with Foucher or Grünwedel, you cannot disregard them. Where are such scholars in Europe now? Does it indicate that a decline has set in Europe also, with special reference to Indian art?

Need for Developing Art History

Afore-said points clearly indicate that art history has not yet properly developed in this country. What has been written and said up to now is a small fraction of what must be done. Again a considerable part of what has been produced is based on the data supplied by the archaeologists, and this applies even to the books like Coomaraswamy's *History of Indian and Indonesian Art* or Rowland's *Art and Architecture of India*, etc. Living in distant lands it was not possible for the said authors and many others to collect the data of the kind which the art historian living in the country and having means could have collected. This means that there is a tremendous work to be done. Besides the fact that the people should try to know better their own heritage, there is also a practical use in developing it. Everybody talks nowadays about encouraging tourism to earn money, but neglects the very objects which attract a tourist. What tourist agencies do towards this is often meaningless. Over and above ancient monuments must not be neglected any more. Under the care of the Archaeological Survey of India, they can never receive due attention, even if the preservation section of it is widened and re-organized. An independent department for the protection of the monuments should be created. One may not agree with this view today, but tomorrow one is bound to accept it. Then who will be the personnel to take charge of such a department? The archaeologist is not the deserving one to perform this job. Art historian alone is the person who can do the service. Under him not only the monuments are better preserved but also they will be better interpreted. But wherefrom one could bring properly trained art historian? Hence one must take care of this matter first.

In the first place, there is a need to create many art museums. Secondly, the existing museums are suffering for want of art historians. The so-called authorities think that if a few pieces are arranged in the exhibition hall in a fashionable manner, that would be a great achievement. If you want to read the nature of a house wife, evening clubs are not the proper places to do it, you have to go into the kitchen or better to its back-yard. Likewise if one wants to judge the ability of the museum's personnel, the store-room and the technical records are the tests, provided that the necessary conditions are there to show their ability. No museum has proper index cards or photographs, etc. let alone any good catalogues. Hence even the concerning personnel do not properly know their own collection; then it goes without saying that the outsiders could hardly know it. How is our study going to advance then? Exhibition is not an end in itself, but a means to communicate and to educate. It is wrong to consider art museum — we are not speaking of every museum — as a centre of education. Exhibition helps the communication in the case of connoisseurs and assists others to become receptive of communication by providing the necessary education in the absence of which nothing could prove to be communicative. Also in the latter case the sole concern of the museum is communication. If this communication does not take place, there is no link between the object and the spectator; hence, the latter forgets the former totally before leaving the museum's gate. Over and above, the museum is not a text book. Even there is a question about the technique of exhibition. People nowadays feel proud of their technique describing it as modern or the most modern by employing the flourescent lights — which is a sign of dullheadedness — and the cases as socles, which do not differ from the packing cases meant for transport of the steel tools, with the exception that the former are given a thick coat of paint or varnish or the both. Indian art consists mostly

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

of the sculpture, and it is very important to think over the ways of its exhibition. In Paris and other places, where museology is taught as a subject, it is assumed that it is better to exhibit the Indian pieces keeping the frontality in view. True, the frontality plays an important rôle in Indian statuary, but the most important feature of it is its relation to its surroundings. And it is this relation which has been consistently maintained throughout the history. Hence Indian museums' personnel should realize this, the sooner, the better, and think in terms of this feature while evolving the ways of exhibition. The nature provides ample and steady light in this country throughout the year, and one has to plan the museum buildings in such a way that this nature's gift could be fully exploited. This requires some hard and original thinking, which in this country of politicians and administrators is a far cry. Another craze spreading like an epidemic is the talk of museology, and everyone wants a museologist for the museum. Museum's work is the one that could be better learnt while engaged in it. The nature of the work, especially that connected with exhibition, differs from case to case and from worker to worker. It is more a practical training than a theory to be learnt in class room. Of course certain very general conclusions could be drawn and taught as broad guidelines in the name of theory. But these guidelines cannot make anyone the "museum's man", unless he has a background to understand those guidelines. This background is nothing but art history. Apart from this, the most of the courses on museology offered nowadays are the medical courses in the colleges without attached hospitals, for a few visits to a museum do not help the trainee.

Almighty bureaucrats and politicians decide even the academic matters in this country. The fact that the art historian alone is the person who can organize the museum is totally unknown to these great men and hence they invite applications for an important post like the Director of the National Museum, New Delhi from the persons having the Master's degree in the following subjects: Indian history, Archaeology, Anthropology, Sanskrit, Pali, Prakrit, Persian, Arabic and Fine Arts. The said museum in its present form is mainly devoted to art, yet one may somehow understand the appointment of an anthropologist as its Director, for anthropology is one of its sections. But what a historian, a Pali or a Prakrit scholar can do there? For the historical and cultural reasons, men of every discipline should know Sanskrit in this country, though unfortunately the situation is quite different now. Still, why should a Sanskritist be invited to the museum and what he can do there is beyond understanding, even experience in archaeology does not enable him to manage a museum. Still more peculiar is to invite those who know Persian and Arabic. What bearing these languages have on Indian art? If there are some inscriptions on Muslim architecture, those buildings are not the objects of museum. The fact is plain that these languages are included keeping the Muslim population in view in the name of secularism. But actually this is an evidence of thinking in terms of parity between the Hindus and the Muslims. Thinking in terms of parity is contradictory to secularism. And if this is not the thinking in terms of parity, then it is a grand hypocrisy, for Latin, Hebrew, or even the ancient Greek, etc. are not included in the list. All this is a politician's or a redtapist's stunt, and it is a damaging factar to the academic tradition. Persons interested in the growth of sound scholarly tradition should see to it that a qualified art historian is given the chance, irrespective of the question whether one is a Hindu or a Muslim or a Christian, etc.

In imitation of the American trends, people in this country are thinking of doing great service to the museums and the public by appointing guide-lecturers and by arranging popular lectures in the museums. There is no objection to such arrangements as these, because they popularize art among the laymen, but what the bureaucrats utterly lack is the sense that popular lectures are nothing but a way of putting the essential part of the subject matter in a simplified language. This means that such lectures must base themselves on scientific work, this in its turn implies that those lecturers should have sound knowledge of the art history. Though the Americans have not formerly done much in the field of art history, they capitalized the work produced in Europe, as far as the European art history is concerned. So far as ethnological museums are concerned, they need not depend on someone else, for they have engaged in these studies for a long time. But whose work is to be capitalized in India? Thus all these items indicate that there is a great need to concentrate on art history and to develop it soon.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

HOW TO DEVELOP ART HISTORY

One may tend to answer promptly the question how to develop art history by saying that the necessary courses should be started in the universities. But this itself is a big question. Where are the people to do this job? Hence one should try to train the men by creating the necessary conditions in which art history could be rapidly developed. This is a double task, developing the subject itself without having fully equipped men, and train some persons in it. This means that a few student generations should grow along with the growth of art history itself. It is a very difficult task and no worthwhile results could be achieved without a highly concentrated effort. The creation of proper conditions and concentrated effort mean also the concentration of the funds. This kind of work is not possible in any universities, which are full of politics based on interdepartmental parities; hence there could hardly be any consideration in them for the needs of a given subject. Universities could have achieved something, if the subject was undertaken decades back and developed gradually. On account of long neglect much work is overdue. The problem is urgent and a very big one and must be tackled on the same scale.

In the circumstances a special institute should be started with four functions, 1. research, 2. teaching, 3. recording and 4. publication. These four items should not be considered separate wings, but they should be coordinated as a single activity, though this need not necessarily mean that each person has to perform all the four functions. The way of conducting these four items may be outlined.

1. RESEARCH: It will have two main streams, theoretical and practical. By theoretical, one should understand not only the study of a few published *Śilpa* texts, but also (*a*) editing the new treatises, (*b*) re-editing the published treatises, (*c*) compilation of historical dictionaries, (*d*) collection of material from other sources, for instance, epigraphical records, etc. A vast *Śilpa* literature exists either in the form of independent works or in the form of sections incorporated in various branches of learning, such as *Āgamas*, encyclopaedies and *Purāṇas*. All these need be edited, otherwise it is not possible to get a full picture. For that matter even the little booklets sold in fairs, etc. in various modern languages under the name of *Vāstuvidyā*, *Silpaśāstra*, etc. should not be neglected on the ground that they are not scientific. Whatever may their style or presentation be, sometimes they contain remarkable matters which reveal the lost links and regional practices. Foolish intellectuals may scoff at them before opening, but a serious student cannot allow his judgements before studying. For various historical reasons the tradition of *Śilpa* MSS is not in a happy state; hence it is unwise to think that it would suffice, if the texts are edited once. One has to re-edit them repeatedly. P.K. Acharya's dictionary is practically a glossary of the *Mānasāra* rather than a dictionary in its proper sense. In point of fact, there has been no special dictionary of art till today. In course of time, connotations of certain words may change, and when the technical terms become popular, they often get spoiled. This happens everywhere, and it happened in India. It is true that this creates problems and confusion, but there is no reason for avoiding this study on account of it, as some are inclined. Indeed the problem is a difficult one, especially when it is related to the architectural terms, but there is no reason to lose one's heart; for this problem is not hopelessly impossible and without solutions. This can be tackled by approaching it historically. Hence a historical dictionary of the terms of art is very essential. A huge number of new terms have come into existence in European languages during the last one century or more, because of various technological inventions of new materials and techniques. True, all these may not be found in Sanskrit or in any Indian languages. When the question of the terms related to arts in India in the past centuries comes, Indian vacabulary is not in any way poorer than European vocabulary of the period prior to the above-mentioned one, and the present writer can guarantee it or even can take the challenge to demonstrate this, provided that the necessary machinary is kept at his disposal. Even this much of achievement will solve the present predicament to a great extent, and one having the knowledge of tradition can coin new terms easily, in a manner that newly coined terms fit into one's own tradition, for instance as we did in the case of the word *Śūlapañjara*, on the analogy of *Asthipañjara* = skeleton, to denote the armature employed in modelling. The talk that the Indian languages totally lack different terminology is based on the ignorance of one's own heri-

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

tage. It does not of course mean that everything is there nor does it imply that what is there is in an easily accessible state. Of course one has to struggle to bring all the material in order. Architecture as a special subject of learning has been introduced in recent years, but nobody bothers to see what stock of terminology we have; this happens especially in a time when the slogans, like "*angrejī haṭhāo*", etc. rent the air. The collection of material from the epigraphical records, throws light on chronology.

Coming to the practical branch of the research, it should be noted that this term refers to field work. It is a long process, and cannot be conducted by the groups of persons sitting under a roof, as the research based on theory is possible to a great extent. A general survey may be conducted by teams of men, but its nature would be informative. The real study based on the field work is to be done by the generations of the students trained in the Institute.

2. TEACHING: No one can become an expert in the history of world art, that is no longer possible in the present world. If such a course is started, the pupils would become rather jesters than scholars. This is not to say that Indians should not specialize arts of any other country. It is certainly desirable that interested Indians should specialize other traditions, but that is not the task of the present day for two reasons. First, how can a country which was not able to devote to its own culture spend the huge amount to open special courses of foreign subjects? Secondly, what are the employment possibilities of such specialists? If the conditions will permit, the special courses of art of different countries may be started later on. It is a task of future. What can be done at present is to introduce the world art history in its barest outline as a subsidiary, without any examination while making the attendance compulsory. This helps checking egoism and self-centredness. But the library should be built up in such a way that it possesses a tolerably good collection of books and journals on arts of various countries, so that researchers would be able to see Indian art in wider context, and if one pleases, in comparative terms too. Then this would turn to be a task of individual researcher, but not of a teaching programme. **The present objective, therefore, should be to produce the specialists in the history of Indian art.**

Duration of studies confined to class room should be seven years. This entire period is meant for specialization of art history. The minimum qualification for the entrance is school final; Pre-Universiry Course is not necessary. Seven years of study will have two stages, each being complete in itself. The first stage spreads over five years and the second stage covers the rest of the two years. The course of study in the first stage consists of all the subjects, the knowledge of which an art historian should have in varying degrees. The study in the second stage is confined only to art and aesthetics.

The subjects involved in the first stage of study are as follows: the art history as the main subject, from the earliest stages to the first quarter of the twentieth century. This should not be a sketchy, but detailed study, though not quite a specialized one. The subsidiaries are: political and religious histories, epigraphy, palaeography, mathematics as far as they are necessary for the study of architecture, architectural drawing, Sanskrit language, etc. The purpose of including the subjects like epigraphy, paleography, and the like is to introduce the student into the subjects, but not to make him an expert. Sanskrit, however, must be taught in right earnest all through the period of study, because people engaged with art history must be able to use the *Śilpa* texts while those teaching it must also be able to teach the *Śilpa* literature; and that tradition must be maintained, otherwise it would be as ridiculous as the present way of teaching Indian philosophies. This point must be underlined, for many do not understand the importance of this matter while some section of people even undermine it. Hence the teaching of Sanskrit should not be confined to the language alone; the study of the *Śilpa* texts and the aesthetics should be introduced gradually at proper stage. Apart from these subjects a bit of training in photography, in block-making, etc. should be given, though it is not meant for the purpose of examination. At this stage the responsibility for the study should lie partly on the teacher and partly on the pupil, but the entire teaching should not be spoon-feeding. Hence seminars, etc. should be its regular feature.

The second stage of study consists only of art history and theory, which are to be taught in a highly

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

specialized manner. Indian aesthetics also should be taught in a detailed manner, to make the pupil fully acquainted with the tradition, which may help them to develop it further in a healthy way. Here the entire responsibility of the study lies on the student, and if the teachers take classes, the standard of lectures should be similar to those delivered before the scholarly audience.

In these two stages the teaching should be such that the audio-visual faculties can be developed. The research should be made compulsory to those who want to go in for teaching, and the minimum period for this would be three years.

3. RECORDING: Under this heading many items would come, such as library, photo-copying unit, draftsman's unit, cartographic unit, photo-archives, photographic unit, etc. The library itself is of two kinds — of the printed books and of the MSS. The library of printed books should comprise not only the books and journals of Indian art but also the major literature on the arts of various cultures and countries, besides all those relating to the Indian culture and archaeology of various regions. Whether the literatures in a particular language are accessible to many or to a few should not be a criterion for the library. The MSS related to art should be collected as far as possible. In other cases the photo-copies of the MSS should be prepared. Even if this is not possible, the microfilms should be made. Thus the library of MSS should comprise all the known MS material, in whatever form it may be. Photo-copying unit should serve to fill up the gaps in collection of either printed books, say those gone out of stock and cannot be obtained in antiquarian market, or of the MS materials. The draftsman's unit is meant for preparing all the items related to architecture, for example ground plans, elevations, sections, etc. Cartographic unit helps in preparing maps, etc. according to the needs of art history. Photographic unit will have two functions: (1) taking photographs of different monuments and its details by going to the respective places, besides making photos at the institute, and (2) doing laboratory work: developing, enlarging and the preparation of diapositives. Photo-archives put in order the photographs, dias, etc. by arranging them according to various systems. It is not enough to get some prints from different museums, or from various archaeological departments, for those collections are not complete records. Certain photographs taken at the time of excavations, etc. have to be obtained from those places, but it is not enough to have single copies, so those items should be copied on negatives for preservation.

4. PUBLICATION: As a matter of fact a few special journals devoted to art have been started, but none has lived long. If there is *Marg* running successfully for about two decades, it is a magazine rather than a scholarly journal, though some valuable articles now and then appear in it. If there is a *Lalita Kalā*, it has not been able to create enthusiasm in the country owing to sectarian and sectional interests. One or two new journals have been either started or revived, but it is too early to estimate what would be their future and contributions. Unless there is an effective organ on permanent footing, no subject can grow in the modern conditions. The publications of even the art books is quite a problem, for want of special publishing houses or even a specialized knowledge in the big general publishing houses. Apart from this general need, there will also be a great necessity to publish all the works done in the institute from the institute itself. The publication should, therefore, be one of the functions of the institute, but the publishing section must be run on strictly profit basis. Almost all the universities and many public institutions in the country publish some books every year depending on their capacity, but the books are sold either on the nonprofit or semi-profit basis. This prevents them from giving sufficient discount to the book-sellers; hence the latter cannot take any interest. It is the book-sellers who can push the sales, and thus popularize the books. Universities themselves have no proper machine to bring the publication to the notice of prospective customers; and even if there are staff looking after these sections they are indifferent, for it does not affect them whether a single copy is sold in a month or not. As a result a scholar living within the radius of fifty miles can hardly come to know of the publication of a book, and this indicates that it is all the same whether a book is published or not. These conditions should be taken note of before planning any publication. It is a false prestige to maintain that a public

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

institution should not publish books on commercial basis. One should only look at the Oxford and Cambridge University publications to realize this point. Even on the financial side the public institutions are not helping the scholar-customer by producing a smaller edition on the pretext that the scholarly books are not sold. This leads to a higher price of the book in spite of fixing it on nonprofit basis. If the public institutions want to help scholar-buyer, they should produce larger edition, which leads to low price and should sell on the profit basis, so that they can realize the investment, even if certain number of copies remain unsold for a long time. This again helps those institutions to publish new books without waiting for the sanction or the donation of the funds each time and thus delaying the publication of the accepted MSS for decades. If there is proper machinery, a thousand copies of any book could be sold in the present Indian market, for the habit of buying books has somewhat increased in the country.

It is impossible in this country to depend on the private press, and to publish a huge number of books and journals in the way described above. Hence the institute must have a press of its own. If public institutions adopt these methods, then there are certain matters which the private publishing houses and presses cannot but learn from them. More important to the publication run by the institute is to have a laboratory of its own to make the blocks for the reproduction of the photographs. For various reasons it is very difficult to get the desirable results of the reproduction from the present Indian block making firms.

These are the details — in outline — of the four functions that the institute should perform, and the grounds for adopting those details. This elaboration indicates that if the institute has to be established on these lines, it becomes a miniature university, though dedicated to one subject. Naturally it involves a huge expenditure at the initial stages of establishing it and a considerable amount of funds every year to run it. But such a big-scale establishment is absolutely necessary if the results are to be produced quickly in a short time, as the country needs them. Scattered and small scale efforts would prove themselves a waste of money. In other words different universities cannot fulfil this need, by starting small departments at the first instance. Moreover, unless there is a well-equipped central place, it is impossible to record photographically all the wealth the country has. In view of this the institute must be established at a central place of the country, so that all parts of the country could be reached more or less within the same time. Hence the location also has a meaning, and the decision in this matter must not be taken on the basis of other considerations particularly not on the political ground. Our efforts in this direction have not yet been fruitful, and we do not see much hope in our future efforts either. This is the reason for putting our views here in detail. We put them here with the hope that someone else may try and succeed in his efforts. It is, however, absolutely necessary in any effort in this direction that such elements as we have referred to in the preface, should be kept away from the very beginning and for all the time, otherwise everything becomes meaningless. We have explained on the practical grounds why such effort could not be made within the framework of any university. Apart from those grounds the conditions in the universities are not congenial for the growth of a good tradition. One should try to establish a sound tradition at least for those subjects which are newly started.

The Present State of Education

When we have said above that the conditions in the universities are not congenial for developing a new subject, it is a summary statement. But the whole educational system has been in an extremely bad shape and now a great crisis has developed. It is not the place to explain our views in detail, but a few points may be mentioned here.

The present educational system is not a national system, but an imposed one by the foreign rule over a century ago, which is being slavishly followed even after two decades of independence. If it is really a British system, the education may have been sound, though it would not perhaps satisfy the national pride, if there is any. This system was introduced with the intention of producing clerks, and hence there is only clerical atmosphere in the educational institutions but not scholarly atmosphere.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

Indian degrees, diplomas and the kind have been and still are being ridiculed in the British universities, which is taken as a compliment by the men of letters of our country. This shows clearly what the intentions were behind the introduction of this system, and it is absolutely silly when educated Indians hold brief for them. This education as well as its influence has gradually killed the Indian way of thinking. The process had set already in the middle of the last century, yet it was not felt, as the process was slow and gradual. Much as the politician may boast of his achievement in the sphere of industrialization, **the present epoch in India is an age of ceded intellect.** There have been some very depressing periods in Indian history, but there has never before been any age when people lost their intellect, their way of thinking.

The greatest problem to be solved is to link the present with the past, though this link means differently from one subject to the other. While discussing the reforms many say that the educational institutions should be developed according to Indian tradition and needs, but these statements are vague. There has been no suggestion what arrangements and methods would make the individual subjects fit into tradition and serve the needs of the day. For that matter, many have no clear notion of tradition or what they mean by tradition. Tradition too is not an unchanged and unchangeable thing, but a process which keeps the link with past development; hence those who want tradition do not wish to live in the past, for it has gone by. Some people are thinking that they can achieve significant results by changing the medium of instruction from English to the regional languages. True, the change is necessary, but the question is whether this can bring about the desired results? Certainly it will not, **if the languages are handled in the present way.** It is a long way before education in India could be set in the right track in view of many dificulties and deficiencies.

Of these, the first problem is the teacher who is not competent, hence he has althrough remained a slave to the administrator, and now he has increased his slavery by his newly acquired habit of adoring the politician. The student has turned irresponsible, hence there is no hope that he will make a better teacher than his teacher. On the contrary, he will prove himself worse. What is going on in the student community is not only unrest but also indiscipline. Parents are largely responsible for this indiscipline, for they themselves do not know what the discipline is. Hardly there is any bringing up of a child in this country at present. The present Indian society is a decadent one. People say that the times have changed, and hence old values of life can no more exist. Times have only changed but not disappeared altogether, but what about the values? Have the new ones suitable to the times replaced the old ones? If they have, what are they ? Without some set of values, no society can persist. The sole responsibility for student unrest lies on the politician, the philosopher of cross-voting and floor-crossing. One might say that it is an over simplified statement, but it is not, for their unrest is usually connected with the elections or with some so-called ideologies. The student does not know his problems, if any; actually he does not bother about his problems. Hence he cannot talk about anything constructive. Of course he talks too much, but all that is only to ask for the postponement of the date of examination or at the most for the representation in the decision-making bodies, which is again the politician's back door entry into the educational institutions. There is no reason for being sceptic about the solutions of student problems, if they are genuinely academic, provided that the student is cooperative. Suggestions for the educational reform do not come from the class room, but only from the bureaux. The administrative staff which already behaves arrogantly, is demanding representation in decision-making bodies. This is another example of politician's interference. Administrator's rôle in the educational institutions is to assist but not to decide, and as such, he is not similar to a civil administrator. If he asks for the representation in decision-making bodies, it comes to mean the same thing as the demand for voting in legislations by the assembly or parliamentary staff. It should be seen whether the elected politician would grant such a demand. All these indicate that the satisfactory improvement of education in India is the one that is to be achieved by generations, but not in decades. This is true, though no one can stop the light-hearted big talks. The present problem cannot be solved within the premises of educational institutions, but require the cooperation of the entire society, and such a cooperation can come, only when there is

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

realization. If there were any realization, things could not get worse as they did. Or certain special occasions may help the reform. Such occasions were: (i) the time when the administrative responsibility of the education came into the Indian hands for the first time, (ii) or when the national political movement gained momentum in twenties and (iii) the achievement of political independence, but people have missed all these emotional occasions. There is no hope for such occasions now. In spite of one's efforts not to be sceptic, the feeling can hardly be resisted whether the country is not preparing for two thousand years of slavery within two decades of independence after two centuries of foreign rule. The politician is not to be believed, for he, with a few exceptions like Gandhiji, is a professional lier.

In spite of all this it is one's duty to do something. One may attempt to bring about some change in the limited areas. It is with this idea that the suggestion for the development of art history was made above with a definite plan, and this plan indicates the way of linking the present with the past, which was mentioned above as a great need of the day. Besides it, there is another matter, which too was consciously thought out, namely the way of fixing the course. This is a common requirement of all the subjects and hence may be elaborated.

In some quarters it is suggested that education should include everything to make the pupil an allround man. This is partly over ambition and partly owing to the desire to imitate the American system, which is a "jacky" (master of none) system. While nourishing the imposed "British system", we were able to evolve a parrot system, and now if the parrot turns to be a jack, he would be an extremely funny creature indeed. Practically speaking, to know thoroughly more than one subject is no more possible on account of the fact that each subject has grown so vast that one has to specialize in only a given branch of any field. It is this specialized knowledge or skill that is employed not only in industry or technology but in every sphere. Moreover, the class room is not the place to provide everything that the modern man needs. There must be such an atmosphere in the educational institutions, that one acquires the knowledge of various subjects moving in that atmosphere, apart from the freedom and scope to attend lectures on any subject one wants and to get some idea of it. Such a scope is not there now. Even the libraries are not in order. The librarians sit on the thrones built up with books, and other sources of information are the monopoly of various bosses. These hurdles should be removed even by adopting ruthless means. There is no other way now than to specialize in any subject; but this specialization should imply, in the initial stages, not only a chosen subject but also some knowledge of those subjects, the knowledge of which is needed for obtaining independence in the chosen subject. At present the combinations are very loose. Present MA courses are far from specialization, for the knowledge acquired by the candidate in previous years is not of sufficiently specialized nature. Moreover, whatever may be one's intelligence, the time is a factor in the case of every one. In view of all these facts it would be much useful to make the period of specialization longer. The first five years should be devoted to give detailed knowledge of entire field along with the general knowledge of all those subjects, which is necessary. When the student has such a background, he can specialize in the one subject during the next two years in the proper sense of the term.

At present there is a craziness for degrees. Hence it is better to do away with the present names and the classification of the documents given as certificates, diplomas and degrees. Entire period of study, excluding the research, should spread over 18 years, and should have the division, 5+3+3+5+2 years. Each division should be administered by different bodies. In a mechanized industrial age one cannot avoid the rush, but one can control the crowd. And there is a great need to avoid the crowd, which will swell as time goes on. Above division fulfills this. The course up to 11 years should be of general nature, without any branches. In the last 3 years of this period the emphasis must be laid on languages, and this is very necessary in a multilingual country like India. Certain special courses in technical skills and subjects should be there, which can be available after finishing the study in the last two of these three periods. The specialization should start from the fourth period in a proper manner which culminates in the fifth period. The research for a period of minimum three years must be made compulsory to those

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

who want to teach in the fourth and fifth periods. This experience of research and a long period of study in the case of those going in for teaching is quite necessary, and it will not be late in life to join the service, for the retiring age in the educational institutions must be made longer than at present. Nowadays a lad of 22 years can enter the university as a teacher, which is harmful to the education, because the experience that could be gained in 17 years is not enough. Even the research is not in a good condition. If we are allowed to make a general statement on the basis of our understanding of certain humanities or arts, it may be observed that even many of those professors who are guiding the research do not seem to know how the research should be conducted, for still they hang on generalizations. Because there is no sufficient specialization, the holders of the present Master's degree feel helpless when they start research now. Hence the whole education should be oriented to the specialization backed by sufficient amount of the general knowledge in the field.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

INTRODUCTION

It will perhaps cause anyone familiar with the cultural history of the Indian continent some surprise, when he glances at the title of this work, since, so far as extant examples of art go, India is better known for its sculpture mainly in stone and then in metal. This does not mean, however, that the use of unbaked clay as a medium of expression is altogether unknown in India. Nor does it mean that clay has not played a significant rôle. Nevertheless, as Marshall observed as late as 1951,[1] the "widespread use of unbaked clay" as a sculptural medium "is a fact that has generally escaped the notice of archaeologists." We may add that in general it has escaped the notice of many others as well, who have studied Indian art in its various aspects.

As a matter of fact, the clay modelling of the particular kind that will be dealt with in this work, has been uninterruptedly practised at least for two millennia, from the 1st century A.D. onwards — so far as we can trace it back now — till to the present day, though with certain modifications necessitated by such factors as the period, region and purpose and though its importance varied from one epoch to the other. And this can be studied from the ancient treatises on art, archaeological evidence and lastly from the modern practice. All these sources are utilized here, but, in the present circumstances, the literary source is the most important of the three and hence the subject must be treated mainly on the basis of it. For this very reason the nature of the literature also may be explained in some detail, but its importance must be established at first.

A few scholars who were engaged in excavations or in the writing of art history have even tried to give some technical account of ancient clay statues[2] and these were naturally based on the observation of mutilated or broken objects and that too the number of which is not very great. For this reason, one cannot expect these accounts to be comprehensive. Others have tried to give the same accounts on the basis of chemical analysis.[3] In some respects the latter method will, of course, yield certain definite results. But this too can never be as sure or comprehensive as ancient written records, since one has to make conjectures in many respects. Admittedly, it cannot be argued that the written records of a certain region and age would be equally and fully valid for all areas and periods. Nevertheless the study of ancient records would itself prove a solid basis for a clearer understanding of the subject and eventually this understanding of the theory may make the study of extant ancient clay figures easier. Further, literary sources provide technical terms — those used by ancient modellers — which normally reveal the way in which the generations of artists thought of and because of this, they lead us to realize the spirit of the former

[1] Tax., Vol. II, p. 439.

[2] Such details are given in Ch. XIII of this work.

[3] Nagpall and Agrawal published the results of their analysis of a head from Central Asia (see *Examination*

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

creations, to some extent at least. In this respect the archaeology totally fails, whatever may be its other values. This is of considerable importance and contributes much to the proper way of writing history of art. In this way the study of the technique on the basis of ancient records has its own value.

There are many Sanskrit works,[4] belonging to different periods, in which detailed accounts of the technique of clay modelling are found. Some scholars have noticed[5] this fact, but they have hardly tried to explain the subject. We may, therefore, make an attempt in this direction here.

As far as our present knowledge goes, the technical account is found in the *Āgama*[6] literature of different religious sects. We propose here to explain the subject on the basis of four works. Although these texts have much in common, they differ from one another in furnishing certain details. Nevertheless there is no point in reporting these minor differences all at once, because such details would prove tiresome. Consequently we have again to select one of these books as the main basis. As far as we have been able to study the subject hitherto, the best account is found in the *Kāśyapaśilpa*. This does not necessarily mean that the accounts given in other texts are of no value. On the contrary, one finds some technically significant points in them which are not found in the above-mentioned text. We shall try, therefore, to explain the subject as fully as possible on the basis of the *Kāśyapaśilpa*, supplementing this with the valuable points obtainable from other texts.

Before mentioning the dates of composition of our sources, we must clarify the difficulties in our way. The *Āgama* literature of different sects is vast, and deals with varied subjects. Several scholars have utilised these sources while working on various subjects.[7] In spite of this, so far as the chronological study of this literature is concerned, the work is not yet in an advanced stage, as eminent scholars have pointed out.[8] Hence, any dates of our sources suggested here should be taken as tentative and approximate only.

(1) The *Kāśyapaśilpa* belongs to the Śaiva sect and its name means the treatise on arts written

and Preservation of a Painted Stucco Head, A.I., No. 15, 1959, pp. 94-7). On account of the similarity between the Indian and Central Asian practices, this article is referred to here.

[4] It is clear from the discussions of different authors (E.H.I., Vol. I, Pt. 1, p. 50; Vol. II, Pt. 2, Appendix B, p. 5 and D.H.I., 209 ff.) that, apart from the works we use here, there are other texts in which this subject is treated, for example the *Suprabhedāgama, Kāmikāgama, Hayaśīrṣapāñcarātra* and *Haribhaktavilāsa*. It is possible that this subject might have been dealt with in other works as well, but such information has not yet come to light.

[5] Gopinatha Rao (E.H.I., Vol. I, Pt. 1, pp. 49-50) and J.N. Banerjea (D.H.I., p. 209 *et seq*).

[6] About the question of the precise meaning of the word *Āgama* there is some discussion (see I.P. 43 ff.; S.T. p. 16 and E.H.I., Vol. I, Pt. 1, p. 21). But generally it is explained as a certain religious scripture.

[7] Diehl's book I.P. is one of the latest of such works and as he has consulted most of the literature published previously one can gain an idea about this literature from his book.

[8] H.I.L., Vol. I, 588 ff. See also Bagchi's article, "*On the Canon of Image-Making, Piṅgalāmata, Ch. IV*", J.I.S.O.A., Vol. XI, pp. 9-31, 1943 and D.H.I., pp. 25-27.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

by a sage called Kāśyapa. This work is sometimes mentioned as *Aṃśumadbhedāgama.*[9] Kramrisch indicates the lower date of this work, stating that it belongs to an age prior to the 15th century A.D., for it was referred to in the *Tantrasamuccaya* of that century.[10] Also she thinks that the *Mānasāra* stands nearest to our work. But it is difficult to accept this, because the subjects are treated more elaborately though in a clumsy way in the *Mānasāra* while in the *Kāśyapaśilpa* they are less elaborate but expounded scientifically. In the history of the writing of treatises on art the 11th and 12th centuries A.D. seem to be the best period from the point of view of the method of treatment and the clarity of exposition of technically significant matters. These are the qualities which the *Kāśyapaśilpa* possesses and it is with this in mind that we believe that the text may be assigned to the 12th century A.D.

In many places the readings in this work, as available in print, are corrupt, and especially so in the case of the part concerned with our subject. Fortunately we have at our disposal a MS. which has not been used hitherto and which contains good readings to a great extent.[11] In order to help scholars in their critical estimation, we shall quote the MS. material in the notes whenever necessary.

The *Śilparatna* deals purely with art and was compiled by Śrīkumāra. It belongs to the later part of the 16th century A.D.[12] As in many other matters, its author literally borrows the portion dealing with the technique of clay modelling from the *Kāśyapaśilpa* and incorporates it in his work. Hence, it need not be considered here as a separate source book. Its real value for us in our present endeavour is that of a MS. which helps in comparing the readings. For practical purposes we shall mention it throughout our work by its own name, i.e. *Śilparatna.*

(2) The *Vimānārcanākalpa* belongs to the *Vaikhānasa* sect. Scholars agree in assigning the date of its composition to the 8th century A.D.[13] This work has been printed in Devanāgarī script at two places — Madras and Trivandram. But the latter edition has been published under a different name, viz. the *Vaikhānasāgama.* We shall mention this work by the abbreviation V.A.K.,

[9] D.H.I., p. 17 and H.T., Vol. I, p. 269, note 67. The *Aṃśumān* is one of the twenty-eight major *Śaivāgamas* and the K.Ś. is one of its twelve *Upāgamas* (supplementary *āgama*). So in this sense the K.Ś. is called *Aṃśumadbhedāgama.* That is why the colophons at the end of certain chapters in the K.Ś. read (e.g. Ch. 66, p. 222 and Ch. 67, p. 225) *aṃśumadbhede kāśyapaśilpe*, etc. This matter has not been very clear to many and we are indebted to Mr. Diehl of Upsala for his kindness in clarifying these points in reply to our inquiry, in a letter dated January 5th, 1960.

[10] H.T., Vol. I, pp. 269-70, note No. 67.

[11] We owe a debt of gratitude to Prof. J. Filliozat, Paris, for supplying us with a transcription of the necessary chapters, made from a MS. deposited in l'Institut Français d' Indologie at Pondicherry.

[12] In an article, "*Sources of Śrīkumāra's Śilparatna*" (A.B.O.R.I., Vol. XXXI, pp. 152-164, 1950, published in 1951) Losch has clearly shown that the Ś.R. is a compilation and that its main source is the K.Ś. Scholars agree on the date of its compilation (Losch, ibid., p. 154; Coomaraswamy, "*The Technique and Theory of Indian Painting*", T.S.F.F.A., Vol. III, No. 2, p. 59, Oct. 1934; and Kramrisch, H.T., Vol. I, pp. 229-30, note 10 and also p. 271, note 68).

[13] E.H.I., Vol. I, Pt. 1, p. 56; D.H.I., p. 26 and H.T., Vol. I, p. 261, note 54 and also pp. 229-30, note 10.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

distinguishing two editions respectively as V.A.K., M. edn. and V.A.K., T. edn. A third edn. in Telugu script, included in the Bibliography, came into our hands recently and a comparison of the contents makes it clear that so far as the part we are concerned with, it agrees with the M. edn. Hence the references are not given to this edn., since it is not the place for introducing the editorial notes related to the minor linguistic aspects.

(3) The *Kāśyapajñānakāṇḍa*, also called *Kāśyapasaṃhitā*, again belongs to the Vaikhānasa Sect. For certain reasons it cannot be assigned to a period earlier than the 16th century A.D.[14]

(4) The *Samūrtārcanādhikaraṇa* also called *Atrisaṃhitā*, is another work belonging to the Vaikhānasa Sect. The date of its composition may be assigned either to the 16th or even to the 17th century A.D.[15]

Undoubtedly all these works originated in South India[16] and, as has been mentioned, belong either to the Vaikhānasa or to the Śaiva Sect. No difficulty will arise by using the books of two different sects, for after all this is a reference to literary, not to artistic traditions. We are not, then, using conflicting evidence when we base ourselves on the texts of two sects in order to explain the technique.

In the *Āgama* literature one may find certain statements about household worship and also about the figures connected with it, yet the main concern of such literature is not household worship but mostly worship in the temples. Of course, the texts sometimes also deal with different images that are to be made and fixed to the outer surfaces of temple walls either without niches or in niches.[17] But, in general, these figures are not all meant for worship. It is in connection with the images that are meant for worship inside temples that the *Āgama* texts take much care in prescribing the material of which they are to be made, according to the purpose which they serve in the manifold worship. But we need not enter into such details and it suffices to note

[14] This can be assumed on stylistic grounds. In religious books like this, the phrase "*bahunā kiṃ pralāpena*, etc. (Ch. 10, p. 14) indicates its later origin, though such phrases were in use long before in scholastic works, commentaries, etc. Consider, for example, another sentence, "*atassarvaprayatnenendireśasya mandiraṃ sundaraṃ kṛtvā*", etc. (Ch. 20, p. 29). This type of phraseology and style developed in the period around the 16th century A.D. as can be noticed in the works of such Sanskrit poets as Vedāntadeśika, Veṅkaṭādhvarī, etc.

[15] Stylistically this work shows the same tendencies as does the previous one (e.g. p. 102, Ch. 24, verse 9). In one place (p. 273, Ch. 50, verse 34) it lists oranges among the fruits to be offered to the deity in one connection or another. This is very unusual and it is left to the scholars conversant with the historical aspects of botany in India to decide whether it can throw any light on the date of the text.

[16] There is some discussion as to the places of origin of certain religious sects and the works belonging to them (Schrader as quoted by J.N. Banerjea, D.H.I., pp. 25-26; Winternitz, H.I.L., Vol. I, pp. 588-90; Bagchi, S.T., pp. 15-16 and Kramrisch, H.T., Vol. II, Appendix, pp. 424-5, note 15) but there cannot be any doubt that all our source books were composed in South India. If this is not accepted, many subjects expounded in these works cannot be reasonably explained. Scholars have discussed similar issues to a certain extent: Gopinatha Rao (E.H.I., Vol. II, Pt. 1, p. 6 and many other statements indicating the same facts, see e.g. Vol. I, Pt. 1, pp. 55-7), J.N. Banerjea (D.H.I., pp. 26-31) and Kramrisch (H.T., Vol. I, pp. 229-30, note 10; p. 233; p. 261, note 54; pp. 269-70, note 67 and p. 290).

[17] This topic is found in connection with the subject that is called *Vimānapratiṣṭhā*, e.g. see V.A.K., M. edn., pp. 267-8; T. edn., p. 142.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

that clay was listed among the four[18] materials which are considered suitable for making the *Dhruvabera*, main deity. These are: bronze, stone, clay and wood. Clay was even held by some to be the best of these.[19] From this the important position occupied by clay in historical days is clear. Gradually it has, however, lost its importance and stone has taken its place, as is proved by the extreme rarity of surviving clay images in Hindu temples. This is obvious also from certain statements of the texts, where, for example, it is said that it would be preferable to replace a clay figure by a stone image when the wooden armature inside the clay figure is spoiled.[20] Although this new tendency arose as early as the 8th century A.D., if not much earlier, it cannot be said that clay modelling went out of fashion altogether. In fact it is in practice even today, as can be seen particularly in Bengal. Perhaps because of this, our texts record the entire technique of clay modelling.

According to the texts, there are two kinds of clay images one of these is the *pakva-mṛṇmaya-pratimā* or baked clay figure, i.e. terracotta. Except in a few cases images of gods should never be made in terracotta; if anybody does so, it would bring about a calamity.[21] Thus we find that in general terracotta is not in favour or even strictly prohibited. Perhaps this is why we do not often find the technique of terracotta proper described in the texts.

The second variety of clay figure is the *apakva-mṛṇmaya-pratimā*, unbaked clay image. (It may be misleading to translate this as "sun-dried clay figure".) Evidently this is the kind that the texts mean when they prescribe the installation of the *mṛṇmayā pratimā* (clay image) in the *sanctum sanctorum* of the temple for worship.

In this connection it should be further noted that the texts prohibit[22] the making of a *Dhruvabera* in relief also, even of unbaked clay, stating similarly that it will cause calamity. The reasons for this prohibition, however, are not specified.

As far as the technique of unbaked clay figures goes, the texts describe it very elaborately.

[18] V.A.K., M. edn., p. 69; T. edn., p. 35 and see also M. edn., p. 448 (in T. edn. this passage is missing) and S.A.A., p. 43. Other details related to the employment of various materials for the images meant for different aspects of worship, can be found in our article: *The Rôle of Polychromy in Indian Statuary*, A. A., vol. xxiv, No. 2 (1961), pp. 118-122.

[19] S.A.A., pp. 71-2 and K.J.K., p. 58.

[20] S.A.A., p. 431, verse 13.

[21] S.A.A., p. 82, verse 68 and also see p. 378, verse 55. According to this source the images of only three gods, namely Jyeṣṭhā, Gaṇeśa and Śāstā may be baked, i.e. in these cases terracotta figures are permissible as an alternative method. Perhaps this is so because in some periods these gods were not considered very auspicious. This would seem quite probable in view of another prescription according to which the images of *piśācas* (ghosts) must always be baked. Gopinatha Rao who utilised many major *Śaivāgamas* observes (E.H.I., Vol. II, Pt. 1, p. 76) that "The baked clay *liṅga* is used for *ābhicārika* purposes; that is, for incantations such as those made to bring about the destruction of an enemy". From this it is clear that all *Āgama* works show the same trend. A similar prohibition is also found in V.A.K., M. edn., p. 399; T. edn., p. 214.

[22] V.A.K., M. edn., pp. 71 and 398; T. edn., pp. 36 and 214 and S.A.A., pp. 81 and 375. Similar matters will be discussed in Ch. XII.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

Theoretically speaking an unbaked clay figure can of course be made in more than one way. But the texts deal with one technique only which we propose to explain. What has been stated here is enough to show that terracotta does not come within the scope of our discussion and when we use the term "clay modelling", we use it not in its comprehensive sense of every kind of image-making with clay, but only in a restricted sense. The extent of this restriction will be clearer from the first chapter in which we shall give a general idea of the technique.

As all our source books belong to religious literature, one may expect that our subject too, in spite of its fundamentally technical nature, is dealt with in the light of religious practices. This is so. In every step of the process of constructing a clay image the texts prescribe certain rituals with appropriate *mantras*, chants or hymns. But to go into those details would demand too much explanation and disrupt continuity. Moreover, for the present our interest lies only in the questions of technique to which we have consequently confined ourselves.

From what has been said so far it is clear that the task undertaken in this work is mainly to explain a particular technique of clay modelling on the basis of ancient texts. According to this technique polychromy is concomitant with clay images, so it is worthwhile scrutinising whether there is any relation between the methods dealt with in the texts in connection with clay images, on the one hand, and images made of different media, on the other. It is similarly desirable to observe how far this technique is traceable from the ancient extant images and whether or not it is still practised. These subjects will also, therefore, be treated at the end so that the present attempt will be complete in all its aspects.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

Chapter I

A GENERAL VIEW OF THE SEVENFOLD CONSTRUCTION OF A CLAY IMAGE

VOCABULARY

1. *Asthi*, bone.
2. *Medas*, fat.
3. *Sirā*, veins, arteries and similar things.
4. *Māṃsa*, flesh or muscles.
5. *Śoṇita*, blood.
6. *Tvak*, skin.
7. *Jīva*, life.
8. *Śūla*, a component part of the armature.
9. *Aṣṭabandha*, a kind of glue prepared mainly out of vegetable substances by way of a certain process of cooking.
10. *Rajju*, rope or cord.
11. *Mṛt*, clay.
12. *Śarkarā-kalka*, lime-stone-paste.
13. *Paṭa*, cloth.
14. *Vaṛṇa*, colour.

METAPHORICAL EXPLANATION OF THE SEVEN MATERIALS USED FOR A CLAY IMAGE AS THE SEVEN ELEMENTS OF THE HUMAN BODY

It is worthwhile to note at the outset the attitude of ancient Indian artists towards the different materials used for the construction of the clay image, since such knowledge leads to a better understanding. Their attitude can easily be noticed in such expressions[1] as the following. A clay image is stated to have *saptasaṃskāras*, that is, it could be made by employing seven different materials which are (i) *śūla* (ii) *aṣṭabandha* (iii) *rajju* (iv) *mṛt* (v) *śarkarākalka* (vi) *paṭa* and (vii) *varṇa*. In this connection the human body also is believed to contain seven elements, which are (i) *asthi* (ii) *medas* (iii) *sirā* (iv) *māṃsa* (v) *śoṇita* (vi) *tvak* and (vii) *jīva*. The seven materials employed for the construction of a clay image are metaphorically explained to be the same as the elements of the human body. To put them schematically, *śūlas* are *asthis*, *aṣṭabandha* is *medas*, *rajjus* are *sirās*, *mṛt* is *māṃsa*, *śarkarākalka* is *śoṇita*, *paṭa* is *tvak* and *varṇa* is *jīva*.

[1] In all the texts these are found scattered throughout the portions dealing with this subject, but all of them are found in one place in V.A.K., M. edn., p. 82; T. edn., p. 42.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

The question may arise as to whether the elements of a living body really guided the artists in determining the materials of a clay image. To answer this question an analysis of these elements is necessary.

Like *asthi*, *śūla* is a strong material on which the body is safely built; thus both are similar as the first stage of the respective objects and obviously in their functional aspect also. The *medas* is known to lie in between the fascia and the skin, but not on the bones as is stated here. In comparing the *aṣṭabandha* with the *medas* the viscidity, which is common to both, seems to be the ground. In spite of this fact it is obvious that the *medas* and the *aṣṭabandha* do not represent the same stage. Nor do *sirās*, because they do not always lie under *māṃsa*, as *rajju* does under *mṛt*. In this case too their respective net-like appearance seems to impress the artists to recognise them as belonging to the same category. *Mṛt* is similar to *māṃsa* as a major factor of the bulk in the body. *Śarkarākalka* alone seems to bear no great resemblance with *śoṇita* either in its stage or in function. *Paṭa* is similar to *tvak* in form and as a surface.

Lastly, colour plays an important rôle, especially when it is part of the very concept of an image. So the fact that an expressive image could be made without colour should not minimise its importance. If colour is part of the very conception, none can ignore it, or its rôle as an important element. Colour has a vital part to play in this technique of making images. It represents the last stage and is final, that is to say, it makes the image act, in the same way as *jīva* makes the body alive. Only in this sense, i.e. in the world of art as an artist conceives it, is colour indeed life. Thus in the case of a clay image colour plays a rôle somewhat similar to that which life plays in the physical body. Nevertheless life does not rest on the skin nor it is one of its qualities either. Colour and life may play a somewhat similar rôle in the clay image and in the human body respectively, but they do not represent the same stage.

This discussion would indicate that the elements of the human body are not the basis for determining the materials of the clay statue and the latter are first selected on practical grounds and then a comparison is made with the elements of the human body on the basis of certain qualities.[2] This does not, however, hold good fully in view of the anatomical and physiological speculations or rather theories found — the present writer has been able to notice so far — already in the early Upaniṣadic period and thus cannot be later than 8th-9th centuries B.C. These early accounts are highly valuable deserving fuller treatment and hence are reserved to be discussed in the last chapter, devoted to the historical aspects of our subject. For the present it suffices to note that those early anatomical and physiological speculations have no doubt a considerable bearing on the technique of clay modelling of the kind which is dealt with in this work. However, it would also be wrong to think that this technique is a mere copy of those speculations. The ancient artists

[2] The matter that follows in this paragraph from the next sentence onwards is an addition, which is not found in I.T.T., p. 26 and which became necessary in view of some modification of our view in the light of new material that we meanwhile came across.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

have also definitely showed their independence by changing the order of the early account of bodily elements as it suits their purpose, for instance, as we have already seen above, *medas* or fat and similarly designating colour as life, etc.

This metaphorical statement is not made, however, as a poetic expression, but in itself it is a result of sincere belief, as is proved beyond doubt by the *mantras*, hymns to be chanted in the long process of rites connected with the construction of a clay image. This metaphorical expression certainly finds its basis in the artist's psychic world, not because this particular technique is connected with religion or rituals. Religious connections are merely accidental, and even without such connections there can be an artistic sphere. In fact there is always artistic activity, independent of religion. In India it might have manifested itself, perhaps most of the time, along with religion. Because of its connections with religion many of us are not able to realise the independent existence of the artist's activity. But the extent of our understanding cannot change its nature. These metaphorical expressions, therefore, whether connected with religious functions or with secular affairs, play their own rôle when the artists really believe in them. In artistic activities such a belief, or rather *bhāvanā*, contemplation, will certainly produce desirable effects and it is immaterial whether the creation serves a religious or secular purpose. Having realised the nature of this metaphorical expression we cannot ignore its significance. Thus these expressions or, collectively taken, this expression, fully reveals to us the attitude of the ancient artists towards the material they used for the construction of a clay image.

THE ORDER OF EMPLOYMENT OF THE SEVEN MATERIALS INDICATED IN THE METAPHORICAL EXPLANATION

In this metaphorical expression itself there is an indication of the order in which the different materials are to be employed, to recapitulate: *śūla, aṣṭabandha, rajju, mṛt, śarkarākalka, paṭa* and lastly *varṇa*. The successive use of these materials will give rise to the same number of stages in the process of the construction of a clay image. Within the use of any one of these seven materials there may be several stages, so that there are more than seven stages in the total construction of the clay statue. But all the minor phases are not taken into account and only the major ones are counted on the basis of different materials. This is proved by the use of the word *saṃskāra* which means not only the preparation of these materials but also their use.

THE TWOFOLD NATURE OF EACH OF THE SEVEN MATERIALS

It is clear from the above that every *saṃskāra* has two aspects — one is the process of preparation of a material and the second is the method of its application or use. Take for example clay. This should first be prepared in an elaborate process and then be used or applied in a given manner. Our texts take the seven materials in the above mentioned order and explain them (except in one or two cases) in both their aspects in the same place. For practical purposes we thought it

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

better to follow a different method. First we shall deal with the preparation of all the seven materials in the same order with one exception, viz. the preparation of the *śūlas*, which we shall leave till the end instead of discussing it in its original place, i.e. at the very beginning. After this we shall explain without changing the original order the method in which the seven materials are to be used. Accordingly, we shall now first deal with the preparation of the *aṣṭabandha*.

At the end of this general view of the clay image, it may be of some use to give certain information regarding the illustrations, Figs. 1-17. The present author made an experiment of modelling a clay image according to the technical account of the *Āgama* texts, at Śāntiniketan during the months from June to August, 1966, taking the necessary assistance from the carpenter and other workers in making armature, ropes, etc., with a view to include, in this work, the illustrations that help quicker and clearer understanding of the subject. This experiment was, however, confined only to certain aspects of that account, while the others were totally left out, such as the application of (1) the varnish (*aṣṭabandha*) on the armature (2) the *śarkarākalka* (3) the cloth and (4) the colour. Also was left out the preparation of the three varieties of clay in twelve stages and instead the clay prepared in a simple way by adding the necessary amount of water to it and kneading (which is generally used in the Modelling Section of the College of Fine Arts and Crafts, in the Viśva-Bhāratī University) was employed, that too not exactly in the very order of layers as the texts describe them. Two factors lead to these omissions: firstly, the photography, in which some of these aspects cannot be shown, such as the preparation of the varieties of clay or the *śarkarākalka*, secondly the time, besides the expenses, not to speak of other problems, involved in the experiment, if it should be made with all its aspects precisely according to the textual prescription.

Though, as a regular student of the practical side of Fine Arts, the present writer had a very little training in modelling as one of the too many prescribed subjects, he had no chance of practising it further. Moreover, he touched the clay again for this purpose after a period of fourteen years and he had to hurry up at the last stages of the experiment. Consequently the figure lacked certain qualities, a good finishing for instance, particularly at the hands and feet. The latter perhaps did not have enough thickness even. There are also two or three errors having some bearing on the technique proper, hence they will be pointed out at the places concerned. Notwithstanding these limitations, the trained eye can see the depth of understanding that exists behind this tradition. If this image creates any undesirable impression in others, they should note that the reasons for it lie with the present modeller, and not with the tradition.

In this entire work the sides — left and right — of all the illustrations are indicated from the standpoint of the photograph itself, but never from the view point of the spectator.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

Chapter II

THE PROCESS OF THE PREPARATION OF ASTABANDHA

EXPLANATION OF THE WORD ASTABANDHA

The compound word *aṣṭabandha* may ultimately mean nothing but a kind of glue, but it is interesting to see how it acquired this meaning. The second part of this compound word, i.e. *bandha*, does not in this case convey the usual meanings of bondage, tie, etc., for it is used here in a strictly technical sense which is not familiar.[1] As a technical term, it denotes a substance which binds. It then assumes the exact meaning of what is called in English "medium" or "binding medium." So the compound word *aṣṭabandha* means the binding medium or glue prepared from eight materials.[2]

VARIETIES OF ASTABANDHA

From the texts we learn that there are two kinds of *aṣṭabandha*. One is said to be meant for fixing the images permanently in their proper places and the other is, then, by implication, meant for applying to wood.[3] We may perhaps take the latter to be a kind of varnish, and it is this type with which we are concerned and which we shall proceed to explain now.

MATERIALS EMPLOYED FOR ITS PREPARATION

The following are the eight materials out of which the *aṣṭabandha* is prepared:

[1] As we shall discuss (see Ch. XI, especially note 32), the word *bandha* was current as a technical term among art circles in ancient India is unquestionable.

Since we were unaware of its technical sense we translated this word elsewhere as "tie with eight" ((*Indologen-Tagung 1959*, edited by Ernst Waldschmidt, Vandenhoeck and Ruprecht, Göttingen, 1960, p. 219). After receiving the MS of the K.Ś. we had to correct this translation.

[2] The following statement is found in the K.Ś. (p. 197) in a different context than the one in which the clay modelling is expounded: "*sarveṣāṃ bandhaṃ cāṣṭabandhamityabhidhīyate*" and from the context it seems rather certain that the derivation of the word *aṣṭabandha* is explained here. In its present form this does not, however, convey a logical meaning because of the corrupt readings and also of the probable loss of some lines. Else in no other text (that we use here) this subject is explained, though in all of them the word is often met with. In any case this compound word must be explained as *aṣṭabhiḥ kṛto bandhaḥ* but not *aṣṭānāṃ bandhaḥ*.

[3] Most probably the former variety is expounded in the K. Ś. in the place referred to in the preceding note and for the latter variety see p. 250. The V.A.K. too gives both the accounts [see M. edn., pp. 77 and 85; T. edn., pp. 39 and 44, but in the latter edn., the whole portion is missing, except the last sentence (p. 44)]. Only the former variety is explained in the S.A.A. (p. 62).

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

(1) *śrīveṣṭaka*, the resin of the Pinus Longifolia
(2) *kunduruṣka*, the resin of a plant, Olibanum (?)
(3) *guggula* or *guggulu*, exudation of Amyris Agallochum
(4) *guḍa*, molasses which are hardened by cooking
(5) *sarjarasa*, turpentine[4]
(6) *gairika*, red chalk or red ochre
(7) *ghṛta*, ghee or clarified butter and, lastly
(8) *taila*, oil extracted from the sesame seeds

The following six materials out of these eight should be used in the quantities shown here against the respective names:

(1) *śrīveṣṭaka*	..	..	..	..	4 parts
(2) *kunduruṣka*	..	..	..	..	3 parts
(3) *guggula*	..	..	..	..	5 parts
(4) *guḍa*	..	..	..	..	1 part
(5) *sarjarasa*	..	..	..	..	8 parts and, lastly
(6) *gairika*	..	..	..	..	3 parts
Thus the total number of parts[5] (*aṃśa*) are				..	24

THE PROCESS TO BE FOLLOWED IN ITS PREPARATION

Taking these six materials in the specified quantities one should mix and pulverize them. We may perhaps take the liberty of stating that one could pulverize these materials separately and then mix them in the specified quantities. To this powder one has to add ghee or clarified butter (*ghṛta*) and sesame oil (*taila*) and then cook the mixture in an earthen pot on a gentle fire (*mandāgni*) until it becomes sticky (*kṣaudramivāyāti*). The quantity of ghee and sesame oil is not mentioned, but the prescription that it should be cooked until it becomes sticky naturally indicates that a good amount of ghee and sesame oil is required.

[4] T. R. Gairola translates the word, *sarja* in this way (see A.I., No. 6, Jan., 1950, p. 103, Technical Section). In the S.E.D. it is explained as the resin of Vatica Robusta.

[5] The V.A.K. literally puts it as "*caturviṃśatibhāgaṃ kṛtvā*" (M. edn., p. 85) which means that the total quantity of six materials should be in twenty-four parts. The account given in this text seems identical with that in the K.Ś., p. 250.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

Chapter III

THE PROCESS OF THE PREPARATION OF THE ROPES

In connection with the preparation of the *rajjus* or ropes there are three items to be noted—the material out of which they are to be made, their size and, lastly, their number.

MATERIAL EMPLOYED FOR MAKING ROPES

One should keep the skins of well-ripened coconuts in water for some time and then take the fibres (*sāra*) out of the wet skins, carefully removing all other stuff sticking to them. These clean fibres are the material out of which all the required ropes are to be made.[1]

Note

Only one plate, viz. No. III in double page, is devoted to the preparation of the ropes, which, whenever necessary, may be consulted for all the details, so far as they can be found in a photograph, as we are not refering to it every time in this chapter in order to save the space.

NATURE AND SIZES OF THE ROPES

Before entering into the details related to the nature and number of the required ropes, we should call to mind the fact that the ropes used inside the clay image are considered to be the *sirās* of the living body, since this assumption has a certain bearing on the topic. In this connection the word *sirā* is used neither in its original sense of vein nor in its confused sense of artery (*dhamanī*). This is proved by the frequent use of the word *nāḍī* in place of *sirā* to denote the same thing. This shows that even where the word *sirā* is used, its connotation is *nāḍī*. The meaning of *nāḍī* here is artery, vein, as well as all those having similar function and form.[2] So it is difficult to translate the word *nāḍī*.

Historically speaking, the *nāḍī* theory bestows a great significance. Whatever society or civilization it may be, it is almost an impossible task to suggest when the medicine, as a practice,

[1] K.Ś., p. 251, verse 23. The readings as available in print as well as in MS. are corrupt, but the correct readings are available from the Ś.R., p. 88.

[2] Dealing with the human anatomy on the basis of Āyurveda, Gananatha Sen shows the confusion that existed in connection with the use of the words—*sirā* and *dhamanī* (P.S., introduction, p. 14). The word *nāḍī* is also used in the Āyurveda, but mostly in the sense of pulse, which is not meant here, as is proved by the entire treatment of the subject.

Touching on the topic of *nāḍīs* as described in this type of physiology, the same scholar tries (see ibid.) to identify some of the *nāḍīs* with some of the organs known in anatomy, for example, *suṣumnā* with the vertebral cord and so on. For all these reasons our explanation of *nāḍī*, would prove to be correct.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

was started in a given society. Leaving aside that question even when we have to speak of the medicine as a system or a systematic study in its proper sense, it is difficult in the present state of our knowledge, to suggest when it was started in India. But it can be said that it is not in any case later than two and a half millennia, irrespective of the question whether it was called sometimes *Bhaiṣajya* in early days or Āyurveda, which has been current for centuries as a technical term. Already long before the Christian era began the surgery was developed in India to a remarkable degree, remarkable especially for that remote age. From certain sources like *Suśruta* we know it for certainty that there was a systematic knowledge of anatomy, i.e. a systematic way of dissection. But as one of the additions to the list of innumerable paradoxes in India, this process of development ceased already, round about the beginning of the Christian era. It is believed that the surgery was of Kṣatriya origin, which point is to be mentioned not to emphasize ancient class conflicts, but to show its historical relevance. We find accounts of *nāḍīs* in early *Upaniṣads*[3] and one of them, supposed to be the earliest, is incorporated in a category of verse called *Gāthā*, which finds itself quoted in the *Chāndogyopaniṣad*, definitely indicating its still earlier date. Thus there is every reason to trace back the *nāḍī* theory at least to the 8th-9th centuries B.C. In spite of the fact that the word *nāḍī*, as has been already pointed out, is used in the sense of artery, vein and other similar things and in addition to these it has been current, mostly in the Āyurveda, also in the sense of pulse. A further fact that may be noted here, is that in course of time there has been a lot of confusion in connection with many anatomical terms, such as *snāyu*, *narhī*, etc. in which the word *nāḍī* must also be included. But in the final sense *nāḍī* means that which is connected with blood circulation, as is also probably suggested by the very name, *nāḍī* (=*nāla*, tube). It would not then be wrong to take it for granted that this *mainly* denotes artery and vein, as also suggested by its classification, as *hitā* and *ahitā*. The word *hitā* means, most frequently, "benevolent", "agreeing",

[3] Ch. Up., 8.6.6, where the *nāḍīs* are stated to be 101. Br. Up., 2.1.19, where 72000 *nāḍīs* are ennumerated and spoken of as *hitā* ("*hitā nāma nāḍyaḥ*"). The question remains to be investigated whether this qualification *hitā* refers to all, i.e. *sirās*(=veins) and *dhamanīs*(=arteries) or not. If the former is the case, it may suggest that the use of the word *ahitā* is a later development or refinement in adopting terminology. If the latter is the case, then it would imply that 72000 *ahitā nāḍīs* were also similarly counted in this period or in this tradition, which seems unlikely, for in that case the reference might have been made to *ahitās* too and, secondly, in most of the later accounts—including one of our sources, viz. the *Kāśyapaśilpa*— the *nāḍīs* are given 72000, in all. It may be noted here that Nityānanda in his *Mitākṣarā* commentary explains the word *hitā* to be "*hitaphalaprāptinimittatvāddhitā iti*", but it is of rather doubtful validity. It is most probable that *hitā* and *ahitā* are used here in the sense of coming and going or in some similar shade of meaning which has been prevalent in still earlier literature, like *Ṛgveda*. The available readings of a passage in the P.Up. (3.6), giving an account of the *nāḍīs*, are ambiguous and hence led to different interpretations of the number of *nāḍīs* (e.g. see commentary of Upaniṣadbrahmayogin, p. 146 and Horsch's V.G.Ś.L., pp. 182-83). After all the P. Up. is not one of the later *Upaniṣads* and hence there is little reason to accept so great a multiplication of the *nāḍīs* at its time in view of the fact that more than thousand years' of later works do not go to the same extent and mostly confine to the 72000. We are, therefore, inclined to believe that the readings as now available to us are corrupt and hence it would not be fruitful to go into further details. A much later work, Kṣ. Up. (verses 7-15) also gives the account of *nāḍīs* enumerating them to be 72000, in all, and distinguishing 101 as important, *vara*. The classification of *nāḍīs* as important, secondary important and minor, is also found in the K.Ś., as shall be seen in detail later. But the V.A.K. considers 14 to be important while the K.Ś. counts them to be 28. Thus this kind of differences occur in various texts and it is a subject to be investigated independently.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

etc., but on this basis *ahitā* should not be considered to indicate the opposite. In the Vedic literature the word *hitā* also had the meanings, "impelled", "running", "going", etc. (E.S.D., cf. p. 1297, col. 2 and also p. 1298, colm. 2). And in reality this sense is almost identical with what the word *dhamanī* conveys, viz. which blows or rather exhales, the latter being more appropriate, since it is one of the early meanings found in the *Ṛgveda*, in which tradition or practice, similar words came into existence for the first time in the medical science. It is in this kind of sense that the word *hitā* is obviously employed in connection with *nāḍīs*. Thus we are to take *hitā* in the sense of that through which the blood flows from the heart into the entire body, i.e. artery and *ahitā* in the sense of that through which the same comes back to the heart, viz. vein. Thus *hitā* and *dhamanī* on the one hand and *ahitā* and *sirā* on the other are synonymous. This study of blood circulation can reasonably be considered to be of Kṣatriya origin, since we know now definitely from Paul Horsch's recent publication that most of the *Gāthā* literature is of Kṣatriya contribution. There is no wonder in it, because this class of people, having to do with the weapons always, began to dissect the bodies, i.e. anatomy, already referred to, and discovered the principle of blood circulation. Thus it is of great significance for the history of medical science as a whole, let alone the surgery. No doubt this *nāḍī* theory was empirical in its origin, but it also took a mystic turn. This is probably because of the fact that the intentions of that folk in this pursuit were not only to know the body, but also to investigate the reality or Real or real principle in man or for that matter the life at large. Now it occurs to our mind that is it not that the five *kośas* as ultimate reality that we come across in the works like the *Taittirīyopaniṣad*, etc. represent the progress of this kind of investigation conducted on the basis of the human body? If it is so, it would not then be quite correct to consider the *pañcakośa* theory to be a part of material philosophy, as some like to see it, though certainly there have been material philosophies at that time. It is to be noted further that this *nāḍī* theory is empirical physiology in its proper sense, though there might be errors in it and though many of its conclusions might not tally with those of the present science. The difference is quite understandable in view of the age when this investigation has been conducted and that too, not for many centuries. But at the same time it is also erroneous not to consider it to be empirical physiology in its origin. The *nāḍī* theory has been taken up by many of those who were neither medical people nor the physiologists, obviously on account of its early connection with the investigation of the reality in man or in life. Hence this subject is to be found in many branches of literature, including the *Āgamas* (especially those of *Śāktas*) on which most chapters of the present work are based. Ultimately it came to be known popularly as a part, if not a monopoly of *Yoga* or rather *Haṭhayoga*, or else also, of the *Tantras*. It is mostly through the last mentioned school that it finds its way even to many foreign countries, especially to which the *Vajrayāna* Buddhism travelled and also to a limited extent through the Hindu Śaivaism or *Tantras* to some other countries like Indonesia or Bāli at least where it still prevails. In this process its origin or beginning and their nature are totally forgotten, though some tinge of physiological sense still hangs in its present form, turned out though as pure mysticism on the whole. It is in its original sense, viz. as the vehicle of blood circulation that the word *nāḍī* is relevant to our subject.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

To come back to our subject proper, the identification of ropes with *nāḍīs* seems to have led the artists to determine the number of major ropes in terms of *nāḍīs*. Further, it led them to name the major ropes after the major *nāḍīs*. But they did not carry this process over to minor ropes, because the human body is supposed to contain thousands of minor *nāḍīs* and it is not practicable to use so many ropes in a clay image. But the texts narrate all these matters to which we turn now.

In all, the *nāḍīs* existing[4] in the human body number seventy-two thousand, but of these only twenty-eight[5] are major and among these again three are of prime importance.[6] In order to represent these twenty-eight major *nāḍīs* one has to tie the ropes on the armature in their proper places.

The three most important *nāḍīs* or *rajjus* (i.e. ropes) are: *suṣumnā*, *piṅgalā* and *iḍā*. Each of these should be made with three strands (*trivartikā*) and the circumference of each of these ropes should measure two *aṅgulas*, so that the diameter would roughly be five *yavas*.[7] Naturally we are to take the *aṅgula* and *yava* as relative measurements, otherwise difficulties will arise, especially in the case of small images. (The relative system of measurements, as far as it is required for the present purpose, will be explained in chapter VII.)

The three most important ropes start from the beginning of the genital organ, run[8] upwards separately (almost all along and in front of the piece of wood in the armature representing the vertebral column) and unite in between the eye brows. From this single rope made out of the three ropes, seven ropes branch out, the names of which are: *gāndhārī*, *hastijihvā*, *pūṣā*, *yaśasvinī*, *alambuṣā*, *kuhū* and *śaṅkhinī*. Each of the first four ropes measures three *yavas* in diameter, while the other three measure four *yavas* each. All seven ropes should be made of two strands (*varti*) only and these strands should be twisted together from left to right or clock-wise (*dakṣiṇāvartitā*).

A total of eighteen ropes branch out from the lower ends of the three most important ropes, *iḍā*, *piṅgalā* and *suṣumnā*, i.e. six from each of them.[9]

[4] The reading, "*catussaptatisahasrāṇi*", as available from the printed K.Ś. (p. 251, verse 22), is incorrect and it should be *dvisaptati*, as is available in the MS. In the Ś.R. (p. 90, verse 33) the word order is changed to *saptatidvi* which is also defective.

[5] In the printed K.Ś. (p. 251, verse 20) we find the reading *nāḍīnāmaṣṭaviṃśatiḥ*, but in the MS. we find it as *mukhyanāḍyaṣṭaviṃśatiḥ*. However in the Ś.R. (p. 90) it is missing altogether.

[6] In the printed K.Ś. the reading is incorrect, while the MS. and the Ś.R. (p. 88, verse 15) contain a correct reading.

[7] K.Ś., p. 250 verse 8 and Ś.R., p. 88, verse 15. In the *Śilpa* texts the diameter with regard to human anatomy is generally considered to be one third of the circumference, hence our rough estimate of five *yavas*.

[8] In the printed K.Ś. the passage concerned with these matters is missing. In the Ś.R. we find a statement, "*tadadhovigrahāstviṣṭavaṃśadaṇḍapurāśritāḥ*" (p. 88, verse 16) but it is found in the MS. with somewhat different readings: "*tadadhovivṛtāstviṣṭadvyaṃśadaṇḍe purāśritāḥ*". Perhaps its correct form would be something like this: *tadadhovivṛtāstvetā vaṃśadaṇḍe purāśritāḥ*.

[9] K.Ś., p. 250, verse 9 and Ś.R., p. 89, verse 23.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

THE PROCESS OF THE PREPARATION OF THE ROPES

The ropes branching out from the *piṅgalā* rope[10] and flowing into the right leg are: *vimalā*, *ghoṣiṇī*,[11] *pṛthvī*, *mahasī*,[12] *tejasī* and *vāyavī*.[13]

The following six ropes originating in the *iḍā* rope[14] run into the left leg: *śabdaspṛśāṅgī*, *pūrṇā*, *susiṃhī*, *vāridhāriṇī*,[15] *vāhinī* and *tāmasī*. Each of these twelve ropes should be made of three strands[16] and each rope should measure three *yavas* in diameter (*ghana*).

The remaining six ropes, namely *gaganī*, *mardinī*,[17] *rodinī*,[18] *rasavādī*,[19] *mṛdaṅgī* and *saṅginī*[20] branch out from the *suṣumnā* rope, and each of these measures three *yavas* in diameter (*vyāsa*) and should have two strands only. The first three of these six ropes should enter into the deltoid region of the right arm running along the right side of the wooden piece of the armature that represents the vertebral column. The last three do the same, but on the left side. The set of three ropes belonging to a given side should join and unite when they reach the deltoid regions of the respective side. From each of these single ropes eight ropes should branch out, which means that there are sixteen in all. Neither the sizes nor the number of strands of these sixteen ropes are specified, so they have to be made according to what is required.

THE NUMBER OF ROPES

Thus there are twenty-eight major ropes which are named after the *nāḍīs* which they represent.

[10] K.Ś., p. 250, verse 13. This statement is missing in Ś.R., p. 89.

[11] MS. reads *śoṣiṇī*.

[12] The reading *vāhinī* in verse 23 (p. 89) of Ś.R. is incorrect, for it is a repetition, see verse 25.

[13] *Vāyasī* in Ś.R., p. 89, verse 24.

[14] K.Ś., p. 250, verse 14. This statement is missing in Ś.R., p. 89.

[15] K.Ś., p. 250, verse 11. In the MS. the passage listing the ropes of left leg is missing. Ś.R. reads *saṃhārī savāhinī* p. 89, verse 25 instead of *susiṃhī vāridhāriṇī*.

[16] This statement is missing in Ś.R. (p. 89) as well as in the MS. of the K.Ś. The printed version of the latter reads here "*pratyekaṃ triyavavyāsā tritrivartir dvivartikā*" (p. 250, verse 12). Its meaning should be: each of the ropes belonging to the legs should have three strands, while those belonging to the arms should have two strands. But such a meaning is not given by the available readings; so it should be amended thus: *tridvivartistrivartikā*.

[17] K.Ś., p. 250, verse 10; but in verse 16 (p. 251) it is read as *mardanī;* in both places the MS. gives *mardanī*, whereas Ś.R. reads *madanī* in one place (verse 24) and *madinī* in another place (verse 29) see p. 89.

[18] This is the reading available in the MS. and in the Ś.R. (p. 89, verse 24 and 29). The printed K.Ś. gives *ghoṣiṇī* (p. 250, verse 10) which is a repetition, and elsewhere *rohiṇī* (p. 251, verse 16).

[19] This is the reading available in the MS. and in Ś.R. (p. 89, verse 24 and 29); in the printed K.Ś. the same is found in one place (p. 251, verse 17), and in another place it is read as *rasavartī* (p. 250, verse 10).

[20] This is the reading available in the MS., but in the printed K.Ś. it is found as *stiṃsanī* (p. 250, verse 10) which is obviously incorrect. Ś.R. reads (p. 89, verse 24) *sraṃsinī*.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

There are also sixteen medium-sized[21] ropes which do not have any names. Apart from these major and medium-sized ropes, mentioned so far as forty-four, in all, a number of minor ropes are required for winding across and around the armature over these forty-four ropes that are already tied to it. Each of these minor ropes measures six *yavas* in circumference (*pariṇāha*), i.e. its diameter (*ghana*) would be two *yavas*. The text is silent about the strands of these minor ropes. This is all that should be noted about the preparation of the ropes.

[21] A few statements concerning this topic are missing in Ś.R. (p. 90, verses 32-33), as a result of this the whole context gives the impression that all the forty-four ropes should be taken as major ones.

All statements are, however, found in the printed K.Ś. (p. 251, verses 20-22), as well as in the MS., although there is a difference between some of the readings. Here we quote from the MS.

evaṃ hi pratimānāṃ tu mukhyanāḍyaṣṭaviṃśatiḥ ||
pradhānanāḍayastevaṃ kalpayetkalpavittamaḥ |
teṣāṃ bhinnāstathā vipra catuṣṣaṣṭiśca nāḍayaḥ ||
tasmādanekadhā nāḍī sarvāṅgantu samāvṛtāḥ |
dvisaptatisahasrāṇi nāḍayaḥ parikīrtitāḥ ||

In this passage there are many grammatically incorrect readings, but we need not go into these details now, for they can be easily corrected. The chief difference between the printed text and the MS. is that the printed version reads *aṣṭāṣṭau nāḍayassmṛtāḥ* while the MS. reads *catuṣṣaṣṭiśca nāḍayaḥ*. Obviously *catuṣṣaṣṭi* is incorrect. If a collective number is the original reading at all, then that must be *catuścatvāriṃśat*. But, as it is, it cannot be adjusted to the metre. Even then one still cannot decide which of these two is the original. In any case we have no difficulty in coming to a conclusion about the meaning, because from either of these two readings it is evident that the sixteen ropes running into both arms are neither considered to be major ones nor completely minor ones, as is proved by the tendency to count them separately. So we have explained them as medium-sized ones.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

Chapter IV

THE PROCESS OF THE PREPARATION OF THE CLAY

VARIETIES OF CLAY

There are three kinds of soil,[1] namely *jāṅgalā* (arid), *anūpa*[2] (damp) and *miśrā* (mixed). The soil which is strong and too hard to dig, is *jāṅgalā*. The soil which contains black sand and which does not create too much difficulty in digging, is *anūpa*.[3] The one having both the qualities is *miśrā* (that means this soil is neither hard nor soft and contains a small amount of sand or stickiness).

The mud or slime (*paṅka*)[4] should be obtained from these three types of soil, but the place

[1] This classification seems to have been followed largely, though it has been explained only in a few *Śilpa* texts. Thus we find it only in one of our four source books, as referred to here. K.Ś. (in print, p. 251 and in MS.) reads here *mṛt-tridhā bhavet*, whereas Ś.R. reads *tridhā hi bhūḥ* (p. 90). The latter seems more preferable in view of the succeeding statements, especially those which mention digging, as it also can be proved by the description of these soils in the S.S. (Vol. I, p. 28), though this text calls them *deśa* (region or locality rather than the country). Here it must be noted that the *miśrā* of the K.Ś. is *sādhāraṇa* according to this text; but it is a matter of difference only in nomenclature without any change of meaning.

[2] Throughout K.Ś. (in print and in MS.) we encounter the reading *anurūpa* (p. 252, verse 3 and p. 253, verse 24), except in one place (p. 251, verse 1), where *jānurūpa* is found instead. But Ś.R. has the reading *anūpa*, which is correct, for in the A.K. (2nd *kāṇḍa*, *bhūvarga*, verse 10, Pt. II, p. 12) it reads: "*jalaprāyamanūpam*". For the same reason its neuter gender is also justified. In the texts *jāṅgalā* and *miśrā* are also read in neuter gender, but obviously they are not correct, for the various synonyms of the earth are generally expected to be in the feminine gender; or in masculine, if it is meant to be *deśa*, as is adopted in the S.S.

[3] Although the text devotes full verse to describe this soil, we can explain it on the basis of only the first half of the verse, for the second half, as available in print and MS., is unintelligible and we could not reconstruct or make out its meaning for definite. In the MS. we find it in this way: *garte manoraṅgastu dṛṣṭaṃ yatsānurūpakaṃ*. The word *garte* gives the impression that potter's clay might have been meant. But this cannot be correct, for it is a description of the soil, but not of the clay. It appears to mean that if this soil, when wet, is touched with the hand, the clay should stick. This would seem probable in view of the fact that the text says that *anūpa* clay must be applied first, and this instruction has a technical significance. If it is not more sticky than the others, it could not have been prescribed for the first coating which must be firmer than the next, otherwise the whole might collapse. For this reason we prefer the reading of the Ś.R., *kṛṣṇavālukasaṃyukta* to that in the K.Ś., viz. *tanuvālukasaṃyukta* (p. 252), as *kṛṣṇavāluka* implies stickiness. Contrary to this account of *anūpa* as containing black sand, the S.S. describes the *jāṅgala-deśa* as having black earth (*kṛṣṇamṛt*), which seems correct. On account of this the doubt arises, if a hemistich: *kṛṣṇavāluka*, etc. was misplaced in the MSS of the K.Ś. by the scribes, while it should have actually preceded the one which it follows now in the print. Nevertheless the other difficulty cannot be solved now. The description of *jāṅgalā* clay in the K.Ś. or Ś.R. as well as in the S.S. suggests that it is harder and more sticky than the *anūpā*. In that case, the *jāṅgalā* variety must be applied at first. But we have not yet come across any evidence on the basis of which we could suggest an amendment to this statement. Hence we have no other way than following what is clearly found in the printed version, when the aspect of application of clay is to be explained (chapter XI).

It may be further noted that Daṇḍin writes (A.S., p. 7): *Jāṅgaloddeśa iva samasūrasthalaḥ*.

[4] Only in this place (Ś.R., p. 91, verse 4; K.Ś., p. 252, verse 5) does the text use this word, elsewhere always the word *mṛt*. Therefore, the words *jāṅgalā*, *anūpā* and *miśrā* must always be used in the feminine gender only, but in the texts they are used in the neuter gender, like the names of the earths. Like the word *paṅka*, certain aspects of the places from which the earth is recommended to be brought, may indicate that this kind of description is made more in view of

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

from where it is brought must be clean (*śuddha*), beautiful (*manohara*), and water should never dry up there. The mud may also be obtained from rivers, tanks or lakes (*taṭāka*) [which lie in such soils]. Its colour may be white, red, yellow or black.[5] The muds or slimes, i.e. various types of clay, are called after the names of the soils from which they are obtained; in other words, the clay is called *jāṅgalā*, *anūpā* or *miśrā*.[6] These three types of clay should be prepared separately[7] with the same process consisting of the following twelve stages.

THE TWELVE STAGES IN THE PREPARATION OF THE CLAYS

(1) While the mud is kept in pots (*pātra*) some water should be added to it. It should be stirred and then filtered with a new cloth into other pots. After allowing the mud to settle in the pots, the water has to be poured out and the mud must be left to dry until it thickens somewhat.

(2) In the second stage the decoction (*kvātha* or *kvāthatoya*) should be made from the barks of four different (*kṣīravṛkṣas*) trees,[8] namely (i) Ficus Indica (*nyagrodha*) (ii) Ficus Glomerata (*udumbara*) (iii) Ficus Religiosa (*aśvattha*) and (iv) Bassia Latifolia (*madhūka*), and these should be poured into the thickened clay in a sufficient amount. Then the clay should be well stirred and kneaded and left to dry again.

(3) In the third stage the decoction made from the barks of two trees[9]—Acacia Catechu (*khadira*) and Terminalia Arjuna (*arjuna*)—should be poured into the dried clay which should be well stirred and kneaded (*mardayet*). After this it should be left till it forms lumps (*piṇḍatā*).

(4) In the fourth stage the decoction made from three Myrobalans (*triphala*), viz. fruits of (i) Terminalia Chebula (ii) Terminalia Bellerica and (iii) Phylanthus Emblica, should be poured into the lumps of clay, which should then be stirred and well kneaded. The clay should be allowed to dry, though not completely, and balls should then be made of it while it is still wet enough to take the impression of the lines of the hand.[10]

anūpā and *miśrā* varieties of clay rather than of *jāṅgalā* type, though these conditions cannot be totally ruled out in case of the last-mentioned soil also.

[5] The reading *viprādivarṇabhedena* in the Ś.R. (p. 91) seems superfluous and it is found neither in the printed K.Ś. nor in its MS.

[6] This is not stated explicitly, but it is implied from the fact that the text refers to different types of clay with identical names (see K.Ś., p. 253, verses 24-25 and Ś.R., p. 93, verses 26-27).

[7] This is also an implied meaning (references as given in note 6).

[8] K.Ś., p. 252, verse 6a. In the same place the MS. reads thus: "*tāvadrakṣya* (*vīkṣya?*) *catuḥkṣīravṛkṣodbhavavadgalai...*". The reading, *lākṣā* in Ś.R. (p. 91, verse 6b) seems mistaken for *vīkṣya*, but it does not seem to fit the context anyhow.

[9] In the printed version of the K.Ś. some sentences are missing in this place. In the MS., too, some words seem to have dropped out. According to the available readings the second and third stage are one. But here we follow the Ś.R. (p. 91, verse 7).

[10] Here the text seems to describe the measurements of these balls, but owing to unintelligible and unreconstructable readings we had to leave out this matter (see K.Ś., p. 252, verse 7b and 8a; the MS. does not contain any better read-

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

(5) In the fifth stage sand and stone dust[11] must be mixed in equal parts and this mixture should be added to the clay. The amount of this mixture should be one fourth of the clay. For ten, eight or at least seven days, one must stir and knead the clay pouring into it the decoction made from the three Myrobalans (*triphala*), mentioned above.

(6) In the sixth stage equal quantities of barley corn (*yava*), wheat (*godhūma*), Phaseolus Radiatus (*māṣa*) and linseed leaves (*atasīpatra*) should be ground together. This powder should be added to the clay, the amount being one eighth of the clay. And then for ten, eight or at least seven days, one should stir and knead the clay pouring the necessary amount of coconut water into it.

(7) In the seventh stage the resin of Pinus Longifolia (*śriveṣṭa*), the exudation of Amyris Agallochum (*guggula*), the resin of Olibanum (*kunduruṣka*) and that of Vatica Robusta (*sarjarasa*) should be taken in equal parts and ground finely. This powder should be added to the clay, the amount of the powder being one sixteenth[12] of the clay. Then yoghurt (*dadhi*) should be added to the clay and kneaded.

(8) In the eighth stage dry ginger (*śuṇṭhi*), long pepper (*pippalī*), pepper (*marīci*) and Curcuma Longa (*rajanī*) should be taken in equal parts and ground together. This powder should be added to the clay, the amount being equal to twenty-fourth[13] part of the clay. Honey (*madhu*), milk (*kṣīra*) and clarified butter or ghee (*ghṛta*) should be added to it and kneaded.

(9) In the ninth stage dried secretions of two trees — Feronia Elephantum (*kapittha*) and Aegle Marmelos (*bilva*) — should be taken in equal parts and ground together. This powder should be added to the clay, the amount being equal to fifteenth part of the clay. Then one must stir and knead the clay, pouring sesame oil (*taila*) into it.

(10) In the tenth stage saffron (*kuṅkuma*), sandal powder (*candana*), yellow orpiment or sulphuret of arsenic (*haritāla*), Costus speciosus or arabicus (*kuṣṭha*), camphor (*karpūra*), Amyris Agallocha (*agaru*) and bright yellow orpiment (*gorocana*) should be taken in equal parts and well ground. This powder is to be added to the clay and the amount of it should be equal to one thirtieth[14] part of the clay. Then one must stir and knead the clay, pouring oil extracted from linseed wood (*atasīkāṣṭha*) into it.

ings either). These statements are missing altogether in the Ś.R. (see p. 91, after verse 9a). It is therefore impossible to comprehend the further significance of this instruction.

[11] K.Ś., p. 252, verses 8b-9. In place of *śilāpūrṇa* the MS. reads *śikhācūrṇa* and an entire hemistich is lost in the Ś.R. (p. 91, verse 9). These readings should be corrected to *śilācūrṇa*, which is supported by the other texts.

[12] Ś.R., p. 92, verse 13b. Here the K.Ś. (in print p. 252, verse 12a, as well as in the MS.) reads *mṛtkalāṃśe śivāṃśakam*, which means eleven parts out of sixteen. This would be almost three fourth of the clay which would be more than the mixture of sand and stone dust. Consequently this reading seems faulty. This would be proved also by another fact, namely that in most cases the amount of any powder prescribed is less than that which precedes it.

[13] Ś.R., p. 92, verse 15a; K.Ś. (p. 252, verse 13b) reads *uddeśāṃśaiḥ*, which is obviously faulty, and the MS. reads *mṛddaśāṃśena*.

[14] Ś.R., p. 92, verses 17a-18. See also K.Ś. (pp. 252-53, verses 15b-17a) which lists these items somewhat differently and

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

(11) The following different varieties of dust are added to the clay in the eleventh stage of its preparation: (1) *svarṇa* (?) -and (2) *rajata* (?) -dusts obtained from the sea or a river[15] (3) earth sought from the house of a crab (*kulīrāvāsa*) (4) the hill of white ants (*valmīka*) (5) the place of ploughs (*halasthala*) (i.e. perhaps earth stuck on ploughs and obtainable from the place where they are preserved) (6) from the beginning of the stalks of the rice plant (*sasyamūla*) (7) the earth which has been scattered by a bull with its horns in a sportive mood and lastly (8) that which has been scattered by an elephant with its tusks in a sportive mood. One should procure as much as one can of these variously scented earths and add them to the clay. Then one must stir and knead the clay for five days pouring into it the decoction made from the bark of Bassia Latifolia (*madhūkatvak*) as well as liquids prepared out of the dried secretions of the trees— Feronia Elephantum (*kapittha*) and Aegle Marmelos (*bilva*).

(12) Now in the twelfth and last stage one should cut the fibres of the skin of well-ripened coconuts into pieces (*nārikelaphalapakvatvak*) measuring an *aṅgula*, or one and a half *aṅgula*, or else two *aṅgulas*.[16] These pieces should be added to the clay and the amount should be one fourth of the clay. After adding them one has to knead the clay again and again. Only then would it be ready for use.

Apart from the texts used here, there are also others which treat this subject and they too,

leaves the *kuṅkuma* out altogether. The same is the case with the MS. The chief difference lies in the amount of powder. In this case the MS. distinctly reads *mṛddaśāṃśa*, while in the print we find in the same place: *muttāṃśāṃśa*, which seems to have been *mṛttriṃśāṃśa* in the original form. The reading *daśāṃśa* in the MS. seems incorrect, for such an amount of powder consisting of costly ingredients would not be easy to add and moreover, these ingredients are not meant for giving strength but protection against possible damage from insects.

[15] "*svarṇa-rājata-cūrṇaṃ ca nadī-sāgara-sambhavam*", Ś.R., p. 92, verse 19. In the K.Ś. (in the printed version, p. 253, verses 17-19 and in the MS.) the readings are generally corrupt at this place, but this much is clear that this text too originally contained more or less the same, as can be inferred from the phrase: *suparṇa-rājitā-cūrṇam*. If the hemistich quoted from the Ś.R. is to be translated literally on the basis of the usual meanings of the words, it runs thus: "the gold as well as the silver dust born of a river or sea". Its real implication is not, however, clear to us, yet, indicating the same fact, we had translated them, rather arbitrarily, as the red and the white chalk in I.T.T., p. 44. But now it seemed better not to venture in that way and as a result we repeated the original words in the body of the text without translation. As the rest of the substances to be employed in this stage of preparation of clay, are nothing else than the varieties of earth, it seems pretty certain that the case is not different with the connotation of the words — *suvarṇa* and *rajata* — here. Commenting on a verse of the *Atharvaveda* (14.10.7), Sāyaṇa explains the word, *kṛśana* as *śaṅkhasya kāraṇabhūtaṃ suvarṇam*, i.e. *kṛśana* is the same as *suvarṇa* from which the conch (?) is born, although at two places in the *Ṛgveda* (1.35.4 and 10.68.11) he explains it to be simply *suvarṇa*. This shows that until as late as 14th or 15th century A.D. it was widely believed that the conches were born of *suvarṇa*, which here does not obviously mean the gold. Still we are unable to make out what material was meant here by *suvarṇa*. The meaning of another word *rajata* in this context remains still more obscure for us.

It is highly interesting to note in this place that according to expert opinion (M.T.M.P., p. 198) there is some evidence, though not quite satisfactory, to indicate that in Europe, at least in the medieval ages, "gold was sometimes used by artists in the form in which it comes from the washings of river sand", hence, as it appears, the gold obtained in this way is referred to as "river gold". The gold meant here is the real metal of that name, whereas it seems not the case with the word *suvarṇa* or *svarṇa* in the present context of our texts.

[16] There is no specification as to which *aṅgula* is to be employed here. But it is safe to take it as a relative *aṅgula*.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

as is clear from J. N. Banerjea's explanation,[17] take the same trend. Observing the use of some ingredients like iron and stone dust, Banerjea was able to note the virtue of the clay thus prepared, but he seems to take[18] it to be stucco, though he does not say so explicitly. Whatever the ingredients and whatever the effects sought by using such ingredients, the clay, in spite of them, will remain clay. In future investigations one may even come across a prescription in some text to mix lime-stone in the clay, but even then that does not change the nature of the clay, for without burning the lime-stone, lime cannot be produced. Evidently the compilers of the texts knew the difference between the clay and lime. If so, there is no reason for us to assign different names to the clay, when this compound is always mentioned in the texts as *mṛt* or clay only.

[17] D.H.I., p. 209 *seq.*

[18] D.H.I., p. 209 *seq.* and also p. 227, note 1. His conjecture about the meaning of the word *pāṣāṇa* and his inclination to believe that "This [clay] seems to be the substance which was so frequently used in making many figure sculptures on the towering *gopuras* of many of the south Indian temples", indicates this. We know for certain that the material employed for making images on the *gopuras* of South Indian temples, is nothing but lime or stucco.

Auboyer seems (I.E.A.I., p. 97) to have closely followed Banerjea's theory (D.H.I., pp. 209-10), though she is not so much committed to consider the clay prepared in this way to be stucco, but she is not correct, when she says that Gopāla Bhaṭṭa gives this account in the *Hayaśīrṣapāñcarātra*, whereas, according to Banerjea, he quotes from this work in his *Haribhaktavilāsa*.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

Chapter V

THE PROCESS OF THE PREPARATION OF SARKARAKALKA OR LIME-STONE-PASTE

MEANING OF THE WORD SARKARA

Not only in Sanskrit but also at least in the literatures of almost all the major modern languages of India the word *śarkarā* is still used in the sense of sugar, not to speak of its derivatives in daily use: *cakkĕra* in the South Indian languages of Draviḍian family (in some cases *c* is dental, not so much as the German z), *śakkar* in many Northern Indian languages of Indo-European family, though another word *cīnī* is more frequently employed, which is derived from Cīnā on account of one-time importation of a variety of sugar from that country. If it comes to that matter the different terms for sugar used in many European languages are supposed to be traceable to the *śarkarā*, though in all cases it may not be a direct source, but only an ultimate one. Say for example the Greek *sakkharon*, which perhaps led to the Russian caxap (pron. *sākhar*). Further, Zucker in German, sucre in French, sugar in English, etc., apart from *sukkar* in Arabic, a language of different origin, which is supposed to be the direct source of some European versions, as the Arabs played middleman in commerce in the mediaeval ages. Another meaning that *śarkarā* has and in which it has been frequently used, is gravel or pebble.

The use of *śarkarā* in the present context of our texts has to do with the meaning of neither sugar nor pebble as such, though the latter sense remains intact in it as a general aspect. Here it conveys a technical sense, viz. lime-stone, as will be clear from its description. In this connection "stone" should be understood to be a small stone or pebble. This term had been current already in the Vedic literature in both of these senses mentioned above — sugar and gravel in general. But we are unable to suggest when for the first time it came to mean the pebble with lime content, i.e. the lime-stone; probably it acquired this meaning sometime or any time before the Christian era,[1] may be even before Pāṇini, i.e. before the 4th century B.C.

While the word *śarkarā* can denote the meaning of lime-stone, it is sometimes compounded

[1] That the word *śarkarā* has been in use from the Vedic times in the sense of both gravel and sugar, is clear from many dictionaries, for instance, S.E.D. But an interesting use related to the latter sense may be referred to now. In the Ch. Up. (5.11.1) we find *Śarkarākṣa* (*Śārkarākṣyaḥ*=son of *Śarkarākṣa*), i.e. sweet-eyed (?) man. An usage of this word is met with in a *Jātaka* (185), called *Anabhirataj ātaka*, where *sakkhara* (San. *śarkarā*) is said to be found in water (*Khuddaka-nikāya*, Vol. III, Pt. 1, p. 45). Of course any type of gravel may be found in water, but from the context it appears that here the lime-stone is meant, though it cannot be claimed to be certain. As we shall soon note, our source books prescribe that *śarkarās* should be obtained from the watery places, so it would not be impossible, if the same is meant also by the use in the *Jātaka* referred to. If it is so, we can then trace back the use of *śarkarā* in the sense of lime-stone to the period around the beginning of the Christian era. But it should be wrong to consider it to be the earliest phase of this kind of usage, since it may or may not be so. This is historically significant, which must be investigated carefully and thoroughly.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

as *ghaṭiśarkarā* for the sake of clarification,[2] since the verb *ghaṭ* means to bind or fasten. So *ghaṭi-śarkarā* denotes that pebble which contains binding element; thus it conveys the meaning of lime-stone without any ambiguity. The word *kalka* means paste without reference to the material out of which it is made. Therefore *śarkarākalka* or else *ghaṭiśarkarākalka* means the paste made out of lime-stones. One would therefore expect that the words *śarkarā* and *śarkarākalka* are used in distinct meanings, but one finds that this distinction is not always maintained in the texts[3] and *śarkarā* is also used in the sense of *śarkarākalka*. The *Kāśyapaśilpa* does not, however, mention it as *śarkarākalka*, but usually in a shortened form, viz. *kalka* in the sense of *śarkarākalka*. In any case this is not a peculiarity of this text alone as the *Vimānārcanākalpa* does so[4] too. But for the sake of clarity we shall always mention it as *śarkarākalka*. After this introduction to the meaning of the word *śarkarākalka* we shall explain the process of its preparation.[5]

[2] It should be pointed out here that the K.Ś. never uses this word *ghaṭisarkarā*; but other texts do so often, see for example S.A.A., p. 58, verse 49 and p. 80, verse 49; V.A.K., M. edn., p. 82; T. edn., p. 42. The portion dealing with this item is lost in K.J.K., p. 68.

Without giving any specific reference, Gopinatha Rao states (E.H.I., Vol. I, Pt. 1, p. 49) that "*kaḍiśarkarā* (a preparation, the chief ingredient of which is the lime-stone)" is listed in ancient texts among the materials to be used for image making. This "*kaḍiśarkarā*" is the same as *ghaṭiśarkarā*. The reason for which he mentions it as *kaḍiśarkarā*, instead of *ghaṭiśarkarā*, is perhaps that he might have noticed this word in a Tamil work, or at least a work written in Tamil script, which lacks signs for many letters needed in Sanskrit; and according to the rules of Tamil pronunciation there is every chance of reading *ghaṭiśarkarā* as *kaḍiśarkarā*. Leaving aside the question of word-form, the meaning that Rao gives to this word is not lime-stone but a material prepared out of lime-stone, viz. stucco, as is clear from our quotation and from his mention of it as mortar or stucco a few lines further on. But this is incorrect, as will become clear from this chapter.

At the end of the last chapter we noted that J.N. Banerjea is inclined to take the clay (prepared more or less in the way already explained by us) to be stucco. In this connection he refers to Gopinatha Rao's mention of "*kaḍiśarkarā*" for support, D.H.I., pp. 227-28. At the same time he also refers to a dictionary, the *Śabdakalpadruma*. In spite of this, his assumption cannot be supported. Moreover, as we shall see in this chapter, a paste is prepared out of *ghaṭiśarkarā* independently of the clay described in the previous chapter. Banerjea's quotation from the *Śabdakalpadruma*, however, raises certain linguistic problems which must be mentioned.

The *Śabdakalpadruma* records that *karkaram* means *cūrṇajanakakṣudrapāṣāṇakhaṇḍam, kāṅkara guṭim iti bhāṣā*, explaining its derivation in a very peculiar way. The clarification made by the dictionary is to some extent debatable. According to some scholars the original or earliest form of the word *śarkarā* is *karkara*. Whatever the grounds for this view may be, it is certain that both forms have been current. Yet they do not always seem to be synonyms. If the word *śarkarā* is used in the sense of pebble, then it can be synonymous with *karkara*. The word or words, *kaṅkaḍ* or *kāṅkaḍ* in the Northern Indian languages are supposed to be derived from the word *kaṅkara* while in the South Indian languages this is used as it is, i.e. *kaṅkara*, which means only gravel. So we do not know whether the word *karkara* ever denotes lime-stone or many other things that the word *śarkarā* means. The assumption that the original form of *śarkarā* was *karkara* appears not to be well-founded in view of an *uṇādisūtra* (443) in Pāṇini's grammar, viz. "*śraḥ karan*", showing the derivation of the word *śarkarā* from the root, *śṛ*.

In Beṅgālī *guṭiṅ* is also used as a word for lime-stone. If so, has it anything to do with the *ghaṭi* of the compound word, *ghaṭiśarkarā*? If any relation could be established it might throw interesting light on some important developments. But we leave the solution of these problems to the linguists.

[3] For example see K.Ś., p. 258, verses 2, 4 and 7 and also V.A.K. ("*śarkarāmālepayet*"), M. edn., p. 89, ll. 9-10; T. edn., p. 46, ll. 1-2 and ("*māsātīte śarkarākalkaṃ samālepayet*") M. edn., p. 88, l. 16; T. edn., p. 45, l. 20.

[4] M. edn., p. 89, l. 12 and 21 and p. 90, l. 3; T. edn., p. 46, l. 3, 10 and 13.

[5] According to our plan we shall explain this subject on the basis of the K. Ś. only. But to do so solely on the basis of its printed version is next to impossible. Although somewhat better readings are found in the MS., these too are far

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

THE PLACES WHERE SARKARAS SHOULD BE OBTAINED

The places where *śarkarās* or lime-stones should be obtained are as follows: rivers, tanks (*taṭāka*), pond-like wells (*dīrghikā*), rice fields and other places where water flows.[6]

From the places as these one should collect only those *śarkarās* or lime-stones which are strong (*sudṛdhā*), born in pure water (*śuddhajalajā*),[7] and composed of gross grains, or in other words, which are granular.[8]

THE OTHER MATERIALS TO BE ADDED TO THE SARKARAS

After the selection has been made one should wash the *śarkarās* and get them dried. When they have dried out completely a very fine powder should be made out of them. This powder should then be ground very well on a grinding-stone (a big oval-shaped Indian type of mortar *peṣaṇī*[9] or *śilāpṛṣṭha*), adding the decoction made from three Myrobalans (*triphala*), viz. fruits of Terminalia Chebula, Terminalia Bellerica and Philanthus Emblica,[10] and out of this paste one should make balls which should be allowed to dry completely.

This is not, however, the end of the task. In the process of image-making the *śarkarākalka* is employed in various layers and so one should prepare it differently for each layer by adding a

from satisfactory. In the circumstances there is no other course except to offer a tentative account of the matter as fully as possible.

[6] The reading *trirūṣārajale śubhe* is found in the MS. instead of *prāṇirūpe jale bhavet* of the printed version of K.Ś. (p. 254, verse 2a). From this place onwards many details of the technique are missing in the Ś.R. and the rest of the technique is described in half a dozen verses, while three complete chapters are devoted to the same matter in the K.Ś. So we cannot expect any help from the Ś.R. But in this particular point it contains the phrase: *atikṛṣṇatāranadīśarkarayā samam* (p. 93, verse 28b). No clear meaning can be obtained from the three readings quoted here. As all the places which are listed as sources of *śarkarās* are connected with water, we thought it better to explain this part of the text in this way, although we could not amend the readings. The V.A.K., however, says that one should dig in a holy place (*puṇya-kṣetra*), or in the bank of a river, or else in any pure and beautiful place in order to obtain the *śarkarās* (M. edn., p. 88; T. edn., p. 45). In view of the instruction to dig for *śarkarās* we need neither suppose that by *śarkarā* this text means a kind of clay, because one is further instructed to wash and grind the *śarkarās*, nor need we assume that the reading *atikṛṣṇatāranadīśarkarayā* of the Ś.R. indicates a black clay.

[7] K.Ś., p. 254, verse 2b. In this place the MS. reads: "*sudṛśāgrāṇi tulyāgrā sthūlavālukasāśritāḷi*".

[8] We do not believe that the phrase *sthūlavālukamudritā* conveys the meaning that the lime-stones should have a sand content, but rather that they contain a great amount of lime. We have, therefore, explained it as granular.

[9] The K.Ś. does not specify in this context the surface on which these should be ground, but it is clear from a verse in which *peṣaṇī* is mentioned and we shall quote this verse in note 14 of this chapter. The Ś.R. specifies it and further the same text says (p. 93, verses 29-30) that an equal amount of river-sand should be added to the *śarkarās*. This does not seem necessary. Moreover, the V.A.K. which in this matter agrees to a great extent with the K.Ś., does not mention it either.

[10] The K.Ś. reads (p. 254, verse 4a) *tilodakasamam*, but in the same place one finds in the MS. *triphalodakena sammṛjya piṇḍaṃ kṛtvā tu śoṣayet*. The latter reading seems correct also in view of the instruction in the V.A.K. (M. edn., p. 88; T. edn., p. 45) to use the same. In the Ś.R. *Kapitthaniryāsajala* is recommended here instead of *triphalodaka* (p. 93, verse 29b), but as a large part of the text is missing here, it is obviously unreliable, moreover, in the K.Ś. this water is recommended for further stages of its preparation.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

given substance or certain materials as the case may be. Hence, making the balls out of this paste is only the first of a series of stages in the preparation. In each step a sufficient number of balls are taken and destroyed before the addition of other necessary materials. The following are the further stages of preparation of *śarkarākalka* or lime-stone-paste.

In order to prepare the three kinds of liquid or gum one should take the necessary quantities of the dried secretion of the tree Feronia Elephantum (*kapittha*) and add five times, five and a half times and six times the amount of water to them. The liquids or gums (*kapitthaniryāsajala*) prepared in these three methods are called *svasṛta*, *svācala* and *saikata* respectively. These are used in the following way to prepare the *śarkarākalka* for employing in the different layers.[11]

Now one should take some balls made of the powder of *śarkarās* and grind them with the *svaśṛta* water. After grinding it should be like butter. [At this stage one must add a certain amount of cotton (*kārpāsatūla*) and grind it further until both are well mixed. At this stage the paste should be so sticky that fine threads, as in the central rod of the banana tree, are visible in it [when some of it is taken in the hands and stretched]. Now the paste (*kalka*) for the first coating would be ready. The text seems to call it *prathama kalka*, so we shall mention it hereafter as the first paste.[12]

[11] K.Ś., p. 254, verses 4b-5. The same are read in the MS. in the following way:

kapitthaniryāsasyaiva jalaṃ trividhamucyate ll
pañcāṃśaṃ caiva niryāsāt sārdhaṃ vā pañcaṣaḍguṇam l
sṛtasvacchajalaṃ caiva saikaṃ ceti kramoditāḥ ll

The names of these three gums are obviously incorrect in both the printed version and the MS. We have adopted the names found in the printed version only because they sound better. The word *saikata* is a quite common name for sand and the other two also denote something, but we do not think they are used to indicate something special. Even if they did, there is at present no possibility of making out what they mean. So there is no other course now than to take them as mere proper names.

The word *pañcāṃśam* in the MS. is incorrect, since in other cases the word *guṇa* is given. The reading *niryāsam* in the nominative case found in the printed version seems incorrect. It will cause difficulty if it is accepted, as there is no other word in the ablative case to go along with *pañcaguṇa*, *ṣaḍguṇa*, etc. Nor can we imagine that the *kapitthaniryāsa* would be five or more times as much as the *kalka*, because that would be absurd. Moreover, the item to be prescribed here is *jala* only.

[12] K.Ś., p. 254, verses 6-7. The same verses are found in the MS. as follows:

svacchasekajalaiḥ piṇḍaṃ peṣayennavanītavat l
paścāt kārpāsatūlaiśca miśraṃ kṛtvā supeṣayet ll
kalkabhinnantu yattattu kadalīdaṇḍatantuvat l
etatkalkaṃ samālipya prathamaṃ kalkameva hi ll

The reading *svacchasekajala* is somewhat confusing; this phrase is supposed to specify the gum that should be used in this stage of preparation of the paste. In spite of this vagueness we have constructed it in the above manner, because in the succeeding two stages the text seems to prescribe *svācala* and *saikata* gums. By doing so we are probably right, since it is technically safe to use greater amount of gum in the pastes meant for underlying coatings.

The account given in the V.A.K. (M. edn., pp. 88-89; T. edn., p. 45) tallies as far as this stage with the account of the K.Ś., but here it ends and so no further details about the varieties of gums etc. are available. Whether these were ever present in this text or lost in print cannot be decided until several MSS. are studied.

The Ś.R. also prescribes that the paste should be ground three times with *kapitthaniryāsajala* and that *kārpāsatūla* should be added once, but surprisingly enough, the further details are not found.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

For the next three successive coatings the paste should be prepared in the following way. *Svācala* gum should be used while grinding the balls made of the *śarkarā* powder. Apart from this pepper (*marīci*) and three Myrobalans (*triphala*), viz. fruits of Terminalia Chebula, Terminalia Bellerica and Phylanthus Emblica should also be added to the paste. The total amount of these four items together should be measured in three ways, namely three times, three and a half times and four times the dried secretion of the tree Feronia Elephantum (*kapittha*), which is used to prepare the *svācala* variety of gum. According to the three different amounts of these four items the paste will also be of three kinds. The text does not give any names to these, yet for clarity's sake we shall mention them hereafter as paste number two a, b and c. In the 'a' variety the amount of those four items (*marīci-triphala*) should be four times the dried secretion of the Feronia Elephantum (*kapittha*), in the 'b' variety three and a half times and in the 'c' variety three times.[13]

For the fifth coating one should grind those balls with the *saikata* variety of gum adding at the same time a certain amount of Eragrostis cynosuroides (*kūrca*).[14] This is the last variety of *śarkarākalka* or lime-stone-paste and so its preparation is herewith completed. Thus the *kalka* is of five kinds when the varieties are counted without reference to the materials to be added, but when they are counted on the basis of the varieties of gums to be used, we get only three kinds of *śarkarākalka*.

These are the details connected with the process of the preparation of *śarkarākalka* or lime-stone-paste.[15] Throughout this process it is nowhere stated that *śarkarās* or lime-stones should be burnt. If they were burnt, then the material extracted from them could have been lime itself. From the ancient times the stucco has been called *sudhā* in Sanskrit, a word also used in our texts.

[13] K.Ś., p. 254, verses 8-9a. The same passage in the MS. reads in the following way:

niryāsāttriguṇaṃ sārdha-triguṇaṃ vā caturguṇam ।
marīcitriphalaṃ hyevaṃ trividhaṃ paripaṭhyate ॥
teṣvañcau tu jalābhyāṃ tu mardayettu punaḥ punaḥ ।

Here there are two points to be clarified. (i) It is not clear whether the expression *niryāsāttriguṇam* means the total *niryāsa* that is used in the three gums or only that much of it which is used for *svācala* gum. Common sense would make us believe that there is no point in accepting the first alternative. We have, therefore, taken the other course. (ii) There is no specification as to which of the three amounts of *marīci-triphala* should be added to the paste which is meant for the second, third or fourth coating. Here too we have specified it on the basis of common sense and our specification is rather in conformity with the tendency throughout this text to prescribe stronger material to the lower layer.

[14] K.Ś., p. 254, verse 11. The verse reads in the MS. in the following way:

kūrcaṃ nyastvā tato vipra peṣaṇyā peṣayet kramāt ।
tataḥ svacchajalaiḥ kalkaṃ pramāṇāntantu pūrayet ॥

If the reading available from the verse quoted from the M.S. is relied upon, *svacchajala* should be added to this variety of paste. *Svacchajala* means pure water and there is no point to use pure water in this paste. Similarity of sound leads one to assume that *svācala* may have been meant. Even then there is hardly any reason to specify it to be *svācala* gum, for the text shows the tendency to prescribe less amount of gum to the material employed for upper layer. From this technical standpoint *saikata* gum may have been meant here, moreover, we have not yet seen it prescribed in any previous stages. We have, therefore, specified it to be *saikata*.

[15] No details whatsoever concerning this matter are found in the S.A.A. and the K.J.K. In the latter they seem to have been lost (see p. 68, para. 2) and it is doubtful whether they were ever discussed in the former.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

Although the paste in question is prepared mainly out of lime-stones, no text ever calls it *sudhā* (stucco). On the contrary, they always mention it as *śarkarākalka* or *śarkarā* or even simply *kalka*. As will be seen in Ch. XII, the *Kāśyapaśilpa* gives specific instructions to use *śarkarākalka* even on the stucco images, if they are to be painted. It is, therefore, obvious that the texts do not call this paste either *sudhā* (stucco) or *cūrṇa* (lime) owing to the fact that the lime-stones are not burnt in the process of its preparation. From an elaborate discussion found in an authoritative ancient work,[16] of varieties of *śarkarās* and various substances to be prepared out of them, it is quite obvious that a clear knowledge of materials and a good terminology to indicate those materials have been known for a long time, about which no one needs to foster any doubts. *Śarkarākalka* or *ghaṭiśarkarākalka* should not be, therefore, misunderstood to be stucco. From a recent conversation with an eminent Tamil archaeologist, K. R. Srinivasan, we came to know that the word *kaḍiśarkarā* is commonly used in Tamil speaking areas, by which the stucco is understood. This *kaḍiśarkarā*, as has been pointed out (note 2 of this chapter), is nothing but the *ghaṭiśarkarā* of our texts, but on the basis of the present use of it in Tamil areas no attempt should be made to interpret it as stucco, since the ancient texts are not ambiguous in this respect. On the contrary we should consider its use in Tamil areas to denote stucco to be a misunderstanding or to be a case of semantic change.

It must be noted, then, that the images made by this technique should never be designated as stuccos in spite of the use of lime-stones. If one inclines to translate *śarkarākalka* as a finer variety of clay, it is not misleading; but to call it lime or stucco would be totally wrong. It seems to us that the best method of translating it is to put it literally as lime-stone-paste, as we did, in spite of the fact that this may sound unfamiliar.

[16] I.Ś.P., Pt. 4, pp. 334-35.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

Chapter VI

THE SELECTION OF WOOD FOR THE CONSTRUCTION OF THE ARMATURE

According to the order of materials, the process of the preparation of *paṭa* or cloth should be dealt with now. But this item obviously does not fall within the tasks the artists are expected to perform. Probably for this reason no text deals with this matter so that the question of our explaining it does not arise.

The next item that should be dealt with is the process of preparation of *varṇa* or colour. All our texts mention some points regarding colours such as the origin, the symbolical significance and so on. These are not of a technical nature and so are of no interest to us at the moment. Also in the *Kāśyapaśilpa* they are found but in addition this text deals with the classification of colours, mentioning certain colours as basic ones and others as mixed. Whereas a very little is said about the process of the preparation of colours, the method of their application is fully discussed. The few points we may notice in this book do not merit a separate chapter and in addition they are more or less the same as those discussed in the *Mānasollāsa* where the process of the preparation of colours is fully described in connection with painting. With regard to this matter we do not find any difference between the practices of painting and painted sculpture. However, differences do appear in connection with certain aspects related to the method of application, which we shall fully explain in the proper context. We therefore do not think it necessary to discuss here the question of the preparation of colours as expounded in the *Mānasollāsa*. Moreover, Coomaraswamy and Gunasinghe have treated these matters fully.[1]

As colour is the last of the seven materials the discussion about the process of preparation of materials should now have been completed, if we had not, for practical purposes, left out the very first item, viz. the *śūlalakṣaṇa*, or the process of the preparation of wooden pieces meant for the construction of the armature. The process of the preparation of the *śulas* requires the knowledge of some other subjects such as the nature or qualities of wood on the one hand, and the system of measurements and proportions of the human body on the other. Hence, before explaining the *śūlalakṣaṇa*, we shall discuss the nature of wood in this chapter and the system of measurements and proportions of the human body in the next.

[1] See the former's article: *The Technique and Theory of Indian Painting* in T.S.F.F.A., Vol. III, No. 2. The latter deals with this topic in his monograph T.P.I., pp. 41-54.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

THE SELECTION OF WOOD FOR THE CONSTRUCTION OF THE ARMATURE

LIST OF TREES OF SUITABLE WOOD

The wood of the following trees is suitable for the purpose of making *śūlas*[2] (or the armature):

Candana, sandal or Santalum Album.
Campaka, Michelia Campaka.
Raktacandana, Pterocarpus santalinus.
Sāla (*Śāla*), white dammar or Vateria indica.
Khadira, Acacia Catechu.[3]
Tinduka, Diospyros embryopteris.
Arjuna,[4] Terminalia Arjuna.
Śiṃśupa, Dalbergia sissoo.
Rājādāna, (*rājatāla*? if this is the case, then Areca-nut tree; if it is *rājataru*, then Cathartocarpus Fistula or Pterospermum Acrifolium).
Madhūka, Bassia Latifolia (if it is *mayūraka*, then it is Celosia Cristata).
Āmraka[5] mango tree (if it is *padmaka*, then it is Prunus padum).
Kuṭaja, Holarrhena Antidysenterica, Wrightia zeylanica.
Saptaparṇa, Alstonia scholaris, Echites scholaris.

DEFECTS AND VIRTUES OF THE WOOD

The strong wood obtained from the middle portions of the above-mentioned trees should be employed for making *śūlas*.[6] In addition the conditions of the trees must be considered. Trees[7] which are decayed, crookedly grown, which have lost their crowns, which have too many bran-

[2] K. Ś., p. 241, verses 8-10. This list of trees is mentioned in all our texts, but in some cases it is longer or shorter as the case may be. There are also some peculiarities or specialities in the inclusion of certain trees, for example the V.A.K. includes *śamī* (Prosopis Spicigera or Mimosa Suma) while other texts do not, similarly only the S.A.A. mentions *śāka* (teak or Tectona Grandis) and the K.J.K. *nimba* (Margosa or Melia azadirachta). In spite of this, the lists in most cases correspond. For these lists see V.A.K., M. edn., p. 78; T. edn., p. 40; S.A.A., pp. 62-3 and K.J.K., pp. 41-3. The last-mentioned text does not deal with this subject in connection with clay modelling, but treats it in a general way recommending the wood of certain trees for purposes such as building a house or temple, or the making of images, etc. and it therefore refers to that chapter while dealing with clay modelling (*pūrvad gatvā*, etc.). It is interesting to note that Śrīkumāra, who borrows material from the K.Ś., does not copy the list of trees, but shortly disposes of it by saying that strong wood such as that of the *khadira* tree should be used (see Ś.R., p. 83, verse 2).

[3] After this *somaśīrṣaka* is listed but we have left it out as it was not clear to us (K.Ś., p. 241, verse 8b).

[4] Instead of *ardhanārīśivaṃ caiva rājātaṃ ca mayūrakam* of the printed version of the K.Ś. (as above) *arjunaṃ śiṃśupaṃ caiva rājādāna madhūkakam* is found in the MS.

[5] Instead of *padmakaṃ kuṭajaṃ caiva saptaparṇaṃ ca satvakam* of the printed version of the K.Ś. *āmrakaṃ kusumaṃ caiva saptaparṇaṃ ca dhanvanam* is found in the MS. The reading *satvaka* does not seem reliable but we are not in a position to decide whether the reading *dhanvanam* is correct or not, so we have left it out altogether.

[6] The hemistich, *śūlayogyaṃ kramāt khyātaṃ teṣvantasthadṛḍhaṃ* of the printed version (K.Ś., p. 241, verse 10a) is defective; the better readings can be found in the MS.: *śūlayogyā drumāḥ khyātāḥ teṣāṃ tatsudṛḍhaṃ gṛhet.*

[7] K.Ś., p. 241, verses 10-13. In the printed version readings are mostly corrupt and some portions are altogether missing. We, therefore, quote the relevant passage from the MS:

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

ches, which have fallen of themselves, have dried naturally (or by themselves), which have cavities, which become the seat of serpents (*vyāla*) and birds, which have been rent by a storm, burnt by lightning, wrapped with creepers, surrounded by bushes, which have grown on or near anthills, grown near the dwelling places of *caṇḍālas* (untouchables), temples, public halls, *caityas*, burial ground, roads, royal palace, the houses of craftsmen, the temple of Rudra, houses of leather-workers (i.e. shoe makers?), etc., which have caught fire and were once used for other purposes, must always be omitted. Instead one must select excellent trees.[8]

At first sight the above-mentioned conditions may appear to be superstitious. In some cases this cannot be denied, but most of them have a practical significance. Take, for example, the advice to reject a tree torn by a storm or burnt by lightning. It is obvious that the natural growth of such a tree would be hindered and that its wood would lose strength and freshness. Thus many of these rules are meant to indicate, in one way or another, the intrinsic value of trees and ultimately, of their wood. The same valuation is intended also by the following classification of trees.

CLASSIFICATION OF TREES AS MALE, FEMALE AND NEUTER

Trees are of three kinds—male, female and neuter.[9] A tree standing on even or uneven

jīrṇā vakrāntarā śrutyā śiraśśūnyātiśākhikāḥ ||
svayaṃ patitavṛkṣāśca svayamevatu śoṣitāḥ |
vakrakoṭarasaṃyuktā vyālapakṣisamāśritāḥ ||
vātāśanipadā bhinnā vallījātibhirāvṛtāḥ |
gulmavalmīkamāśritya caṇḍālāvāsasaṃśritāḥ ||
devālayasabhācaityaśmaśānapathijā drumāḥ |
nṛpamandiraṃ saṃśritya karmakārālayāśritāḥ ||
rudramandiraṃ saṃśritya carmakārālayāśritāḥ |
andhā caiva tu vṛkṣāśca anyakarmasu yojitāḥ ||
varjayettu prayatnena gṛhīte kartṛnāśanam |
tasmātsarvaprayatnena doṣāḍhyaṃ parivarjayet ||

[8] Apart from this short statement the K.Ś. does not enter into the details concerning the nature of the trees that should be preferred. But the other texts do so after describing the undesirable trees, e.g. the V.A.K. says that trees which have grown near tanks full of lotuses, near plants like the holy basil and so on, are to be selected. However these details are not of much significance from the point of view of technique.

[9] In the printed version of the K.Ś. pp. 240-41, verses 2-7, this passage is on the whole incorrect. We have therefore followed the text as found in the MS. which runs as follows:

strīpunnapuṃsakaṃ ceti vṛkṣabhedaṃ tridhā bhavet |
snigdhe vā'snigdhābhūmau vā ārjavaṃ sudṛḍhaṃ ghanam ||
alpaskandhasamāyuktaṃ phalaṃ pañcadalaṃ dṛḍham |
śītaloṣṇaṃ ca sammiśraṃ alpasneharasānvitam ||
yattatpuṃliṅgamākhyātaṃ devānāṃ tadihocyate |
snigdhe vā(?)snigdhabhūmau ca ārjavaṃ cātimārdavam ||
mūlādagraṃ kramātkṣīṇaṃ puṣpaṃ caiva phalaṃ dalam |
atimārdavasaṃyuktaṃ atiśītalasaṃyutam ||
atisnehasamāyuktaṃ rasaṃ caiva tathā bhavet |
etatstrīvṛkṣamākhyātaṃ devīnāṃ śūlayogyakam ||
kṣīṇamūlasamāyuktaṃ (patraṃ) puṣpaṃ phalaṃ tathā |
atidurbalasaṃyuktaṃ yattad ṣaṇḍamudāhṛtam ||

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

ground grows straight, which is strong and solid (i.e. having a close grain and devoid of cavities), having a few branches only, the fruits, flowers and leaves of which are held strongly, having a touch which is neither too cold nor too warm and which contains a moderate amount of oil and water, is male.

A tree standing on even or uneven ground grows straight, which is soft, having a trunk tapering from bottom to top, whose flowers, fruits and leaves are too soft (but not weak or loose) and which contains a large amount of oil and water, is female.

A tree with a trunk the top of which is wider than its bottom, whose leaves, fruits and flowers are too weakly attached, is neuter.[10]

Whether this classification of trees into three categories (male, female and neuter) is valid from a botanical point of view, is a different matter. Nevertheless, it is obvious that it is a further insistence on the point that only hard and strong wood should be used for making the *śūlas* in order to ensure the utmost permanency of the image. It is also stated that the *śūlas* meant for a male figure should be made of the wood of a male tree and, similarly, those for a female figure of the wood of a female tree, while the use of the wood of a neuter tree is always to be avoided for this purpose. We cannot explain the significance of this instruction except one point that the prohibition of the wood of a neuter tree aims at the greatest permanency, as is obvious from the bad qualities of this type of tree.

THE SEASONING OF THE WOOD

In keeping with the afore-said conditions the tree should be selected and cut on an auspicious day. After clearing the branches the trunk should be brought to the place (*karmamaṇḍapa*) where the *śūlas* are prepared. Here a platform (*sthaṇḍila*) of coarse sand should be made. The length of this platform should be determined by necessity and its width should be half the length, while

[10] This classification of trees as male, female and neuter, is found only in the K.Ś. and the V.A.K. In the latter the trunk of the tree is considered the basis of this classification. According to it a tree whose trunk is straight and round from bottom to top, and having a great number of branches, is male. A tree with a trunk tapering gradually from bottom to top is female and a tree with a trunk which is broader at the top than at the bottom is neuter (M. edn., p. 78; T. edn., p. 40). As a matter of fact almost all the treatises on art deal with the selection of trees, but not in all of them the classification as male, female and neuter is found, as for example S.S., Vol. I, 65 ff, while in some this topic exists, e.g. see I.Ś.P., Pt 4, p. 331, which account tallies with that of V.A.K., except in one case, viz. neuter tree. According to the V.A.K. many branches are a qualification of the male tree, but according to the K.Ś. these are a disqualification. The reason for this difference needs further investigation.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

the height should be four *aṅgulas* or three inches. Placing the wood on this platform, one should leave it to season (*śoṣaṇa*) for a year,[11] or at least half a year, after which the *śūlas* can be made.

[11] In this place the MS. reads: *māsaṃ pakṣamathāpi vā*, which is incorrect, because one month's time for seasoning is too short. This is also proved by the statement: *paścācchūlaṃ tu kartavyaṃ tvaritantu na kārayet*. In the printed version (K.Ś., p. 242, verse 33), however, we find: *samaṃ pakṣamathāpi vā*. We believe that this could have been originally *samamardhamathāpi vā*. (For the same topic see also V.A.K., M. edn., p. 80; T. edn., p. 41). The period of seasoning is mentioned in the I.Ś.P. (Pt. 4., p. 333, verse 34) as eight or five or at least three months.

The K.Ś. further says that the trunk should be placed in such a way that its face touches the earth. In another verse (p. 242, 23) it is stated that the side of the tree facing east when the tree is still standing is considered to be its face; and, accordingly, the west side would be its back, while the south and north sides would be right and left respectively. These and similar statements do not seem to have any technical significance.

Such matters, however, seem to be repeated in most of the books. J. N. Banerjea quotes a verse from the *Mānasāra* (D.H.I., p. 208, note 1), pointing out that P. K. Acharya's translation of it is incorrect. At the same time he states that the second half of this verse does not render any meaning. But if the verse, as he quotes it, is correct, then, according to the second hemistich, the side of the tree, which touches the earth when it is cut, is its face and, consequently, the opposite side is its back. Thus a different principle is applied here in determining the face, but whatever the principles followed they have no great significance. The texts also state that the lower and upper portions of *śūlas*, pillars, etc. should be made in accordance with the course of the trunk, i.e. its beginning and top. This and similar statements have sufficient technical significance.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

Chapter VII

THE SYSTEM OF MEASUREMENTS AND PROPORTIONS OF THE HUMAN BODY

For making the *śūlas* or component parts of the armature properly out of the selected wood a definite knowledge of the proportions of the human body is highly necessary, as the latter determine the size of the former. Once the armature is made, no major nor even many minor alterations can be made in the later stages of modelling. Also in view of this practical difficulty a definite knowledge of the proportions of the human body is utmost necessity.

In ancient India a system of anatomy along with a system of measurement was evolved for the artists. So far as our present knowledge goes, this system has been in practice for two thousand years. Though sculpture and painting are not taught on the basis of this ancient system in the schools of arts of modern India, yet this system is alive today, thanks to the faith of the traditional artists in their own science. These simple-hearted men keep this system in practice, though many of them are unable to explain it methodically. Apart from the living tradition, we can also study this system scientifically from hundreds of books such as the texts we utilise here. In spite of this, much misconception prevails about the scientific nature of the system of anatomy followed by the ancient Indian artists. We need not discuss here the questions of how this misconception arose, nor its extent etc. Perhaps it suffices to mention here that the very attempt, in the present age, to name this ancient system of anatomy as *tālamāna*, is totally wrong, not to mention the other inadequate knowledge concerning the major issues of the system.

THE SYSTEM OF MEASUREMENT

In the following we shall give an account of the system of measurement and anatomy as practised by Indian artists so far as we need it for the present purpose. In this system human figures having different proportions are expressed in the number of *tālas*, for example *pañca* (five) *tāla* figure, *ṣaṭ* (six) *tāla* figure, *sapta* (seven) *tāla* figure, *aṣṭa* (eight) *tāla* figure, *nava* (nine) *tāla* figure and *daśa* (ten) *tāla* figure. *Tāla* literally means "of the palm", i.e. the measurement of the length of the palm, or more precisely, from the wrist to the top of the middle finger. This is only its derivation and this meaning is not applicable in most of the figures mentioned above.[1] In practice *tāla*, as a unit of measurement, signifies a given length divided into twelve

[1] *Tāla* is sometimes referred to as *mukha*, face, i.e. the length of the face from the hair line to the end of the chin. This means that the face measures one *tāla*. In the same way as *tāla* in many cases does not correspond to the palm, so the face, as a given length or measurement, does not correspond to the faces of many figures whose total heights differ. Where and why these correspond or not, is a subject of discussion in its own right.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

equal parts called *aṅgulas*. In other words, a *tāla* consists of twelve *aṅgulas* and this *aṅgula* is the basic unit in the Indian system of measurement.

In ancient days several methods were followed in order to determine the size or length of the *aṅgula* according to purpose. In most cases, however, there was uniformity in adopting a given standard of multiplication and a particular terminology. Perhaps it is strange that with respect to measurements the decimal system was never applied in India, the land of its invention. In the majority of cases the one-eighth system was followed in the division of the *aṅgula* and in this way the *aṅgula* was further divided in several stages down to a *paramāṇu* (lit. atom), a small particle that can be seen drifting in a sun-beam which enters a dark place through a small hole. All these fractions have only theoretical significance and have never been in use, except for one, namely the *yava* (lit. barley corn, i.e. the width of the central part of a barley corn). This *yava* is one eighth of an *aṅgula*. While the names of the units of measurements are the same in each system, their connotation (i.e. the measurement they denote) varies according to the occasion in which they are used.

In the field of image-making or figure-drawing the measurements denoted by these words are not absolute but relative. They are determined in the following way. The total height or vertical length of an image or figure is decided first. This is then divided into equal parts by that number by which number of *tālas* the figure has to be measured. For example, if a ten-*tāla* image has to be made, the total height of the figure should be fixed first and then be divided by ten. The resultant length of one part would be *tāla* which is further divided into twelve equal parts in order to get the length of an *aṅgula*. The *aṅgula* is the basic unit of measurement, though it has several varieties of fraction. In the field of image-making or painting the *aṅgula* is mentioned as *dehalabdhāṅgula* in order to distinguish it from the other types of *aṅgula*, such as the *mānāṅgula* which is used in architecture and the *mātrāṅgula* which is used in the construction of sacrificial altars and so on. *Dehalabdhāṅgula* means the *aṅgula* which is obtained from the body, implicitly from the total height of the body. Thus it indirectly specifies this system of measurement as a relative one. In this system the *tāla*, *aṅgula*, *yava*, etc. are therefore relative measurements and, as such, they may create trouble when translated by popularly known names which have connotations of their own.

What is called *navatāla* figure in the Indian system of anatomy is nothing but the adult body. In nature we may find some variations in the measurements of adult bodies and this is even more true when ethnical differences are taken into account. But in this branch of science the conclusion that the adult form measures nine *tālas* is drawn on the basis of average measurements. If this science is to be formulated, the only possibility is to depend on average measurements and, in fact, dependence on common or general observations is the case with every science. Nothing can be said with regard to such questions as when this system was formulated, on what ethnological group it was based and so on. On the basis of our study it can safely be stated that the practice of

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

measuring an adult body by nine *tālas* was in use from at least the 2nd century A.D.[2] But this does not fix the date of its origin; on the contrary, it only indicates the limitations of our knowledge. Further, the Indian system of anatomy for artists is not arbitrary, as some believe. It was certainly formulated after much observation of nature. The realisation that an adult form measures nine *tālas* is a great achievement and it is a landmark in the development of this system of anatomy in India.

With some exceptions the *Āgama* texts generally show a tendency to prescribe the *uttamadaśatāla* (superior ten *tāla*) measurements for the figures of the major gods. But there are other texts which either deal purely with the graphic and plastic arts or belong to different categories, such as the mythological (*purāṇa*) and encyclopaedic books and these texts show a general trend to prescribe the *nava* (nine) *tāla* measurement for the figures of important gods and great men. Thus a variation in the prescription may be noticed but it does not lead to a significant difference.

We must realise that the Indian system of anatomy used by the artists is a system of proportions. When *uttamadaśatāla* and *navatāla* figures are looked at from this point of view there is no great or notable difference between them[3] with regard to the proportions of the total height and whatever difference exists in the minor divisions is not of great significance. Notwithstanding this we shall give the main division of the *daśatāla* figure adhering to the kind of texts used here.

Before we give the measurements of the *daśatāla* figure another point should be clarified. There is a practice, which has, so far as our present knowledge goes, existed from at least the 5th or 6th century A.D., of referring to these measurements with certain adjectives, such as *uttamadaśatāla*, *madhyamadaśatāla* and *adhamadaśatāla*, meaning the superior, middle and inferior ten *tāla* measurement. When four *aṅgulas* are added to a given number of *tālas*, it is called *uttama*, superior and when the same number of *aṅgulas* are subtracted, it is named as *adhama* inferior. It is called *madhyama*, middle, when neither addition nor subtraction is made. So the words *uttamadaśatāla*, *madhyamadaśatāla* and *adhamadaśatāla* mean 124, 120 and 116 *aṅgulas* respectively.

After this brief introduction to the system as a whole, we shall proceed to the details of the

[2] On palaeographical grounds we have traced a technical term to this period, in our article *Prācīn Śilpiyoṃ kā Śārīr Parijñān*, M.G.A., p. 909 (pp. 908-924).

[3] Stella Kramrisch (see H.T., Vol. II, pp. 309-11, including notes) correctly points out that the *daśatāla* system is built up on that of *navatāla*. Also she draws attention to some similarities noticeable between the Indian, Greek, Roman and Byzantine systems of human proportions. But it is difficult to agree with her when she observes that the *daśatāla* measurement 'approximates most closely the "sectio aurea" in the classical statuary of the West', in which 'the navel divides the total height of the figure'. In the Indian system of anatomy both in the *navatāla* and in the *daśatāla* figure the centre of the body lies at or around the beginning of the genital organ.

For the sake of information a further point may be added here. Erwin Panofsky discusses the systems of proportions followed by the artists of the West from ancient to recent times, in an article originally written in German (to which Kramrisch refers) and later translated by himself into English (M.V.A., pp. 55-107). He is of the opinion that the Byzantine system is different from that of Vitruvius and he has "no doubt that the origin of this system", viz. the Byzantine system "is to be sought in the East", i.e. in Arabia (ibid., p. 76).

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

daśatāla system. The measurements of the *daśatāla* figure amount to some hundreds, if all are included. But for the present purpose we need not go into such minute details and it would suffice if certain measurements, which are important to our present need, are given here. The following is the necessary vocabulary:

Uṣṇīṣa, originally head-gear or turban, later a hair-knot on the head, and still later a part of the height of the skull, or an upper part of the parietal bones. Our texts use it in the last sense.

Keśānta, literally the end of the hair, i.e. the line on the skull beyond which no hair grows, which is why this area is often called *keśāntarekhā*, hair-line, sometimes also *keśāntadeśa*. Naturally there are two of these lines, one is at the front and the other at the back. Generally the simple phrase *keśānta* means the front line. This is seldom specified as *pūrvakeśāntarekhā* (front hair line), but the line at the back is often specified as *paścimakeśāntarekhā* (back hair line).

Akṣisūtra, the horizontal line running across the tear or inner corners of the eyes.

Nāsikānta, lower end of the bottom of the nose.

Hanusimā, lower edge of the chin.

Gala, a thin sheet of pad-like muscles hanging below the mandible, in short, double chin.[4]

Kaṇṭha, neck, more precisely the front portion of the neck.

Hikkā, pit of the neck, in other words the cavity lying below the throat and above the upper edge of the sternum.

Hṛdaya, generally heart, but here it is the lower end of the sternum or pit of the stomach.

Nābhi, navel or umbilicus.

Liṅgamūla, some times mentioned as *medhramūla*, the beginning of the genital organ.

Ūru, thigh, i.e. the part from the *liṅgamūla* to the upper part of the knee-cap or patella.

Jānu, knee (patella).

Jaṅghā, shank, i.e. the area from the lower part of patella to the end of the interior ankle.

Pādocca, or *pārṣṇi*, height of the heel, i.e. from the end of the interior ankle to the ground.

Kakṣā, armpit (i.e. *kakṣāmūla*, anterior edge of the armpit).

Bāhumūla, a part of the arm a little above the ending of the deltoid muscle. In other words, the part of the arm which is on the horizontal line running across the armpits.

Madhya, or *madhyodara* as our texts describe it in connection with clay modelling, both indicating the loin.

Kaṭi, hip, i.e. the middle third of the total length of the part between *nābhi* and *liṅgamūla*.

[4] This specification is found only in the texts belonging to the *Āgama* school. In other books it is the front portion of the neck. In fact, *gala* usually means throat.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

Ūrumadhya, middle portion of the thigh, which has the greatest width and girth in the whole thigh of the male figure.

Ūrumūla, the beginning of the thigh, which, as against in the male body, has greatest width and girth in the whole thigh of the female figure.

Jaṅghāmūla, the beginning of the shank, i.e. that part of it which lies below the knee and above the calf.

Gulpha, ankle.

Maṇibandha, wrist joint.

Korpara, also spelt *kūrpara*, elbow joint.

Prakoṣṭha, or *prabāhu*, forearm.

Hasta, the hand (including the fingers).

PROPORTIONS OF THE MALE FIGURE

The major divisions of the total height or the vertical length of the *uttamadaśatāla* figure are as follows[5]:

a=*aṅgula*, *y*=*yava*.

	a.y		*a.y*
Height of the *uṣṇīṣa*	1.3	Height of the skull	4.3
From the *uṣṇīṣa to the pūrva-keśānta*	3.0		
From the *keśānta* to the *akṣisūtra* ..	..	.. .. ..	4.3
From the *akṣisūtra* to the *nāsikānta* ..	..	.. .. ..	4.3
From the *nāsikānta* to the *hanusīmā* ..	..	.. .. ..	4.3
From the *hanu* to the *gala*	0.4	Height of the neck	4.3
From the *gala* to the *hikkā*	3.7		
From the *hikkā* to the *hṛdaya* ..	..	.. .. ..	13.3
From the *hṛdaya* to the *nābhi* ..	..	.. .. ..	13.3
From the *nābhi* to the *liṅgamūla* ..	..	.. .. ..	13.3
The height of the *ūru*	..	.. .. ..	27.0
The height of the *jānu*	..	.. .. ..	4.0
The height of the *jaṅghā*	..	.. .. ..	27.0
The height of the *pārṣṇi* or *pādocca* ..	..	.. .. ..	4.0
The total height in *aṅgulas* is ..	..	.. .. ..	124.0

i.e. 124/12=10 *tālas* 4 *aṅgulas*.

[5] These are according to the account found in the Ś.R., pp. 34-46.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

Apart from the major vertical divisions it will suffice to give the measurements of the width at a few points as well as the length of some items which are important for our purpose.

	a.y	*a.y*
The width between the *kakṣās* is ..	22.4	
while the width of each *bāhumūla* is	9.4	
and thus the total width of the chest including the *bāhumūlas* along the horizontal line running across the *kakṣās*, is[6]		41.4
The width of the *madhya* or *madhyodara* is		16.4
The width of the *kaṭi* from one end to the other is		20.4
The width of the *ūrumadhya* from one end to the other is		13.6
The length of the whole foot from the heel to the end of the toes is		17.0
The width of the fore-foot, i.e. at the beginning of the toes, is		7.0
The length of the *bāhu* is		27.0
The length of the *korpara*[7]		2.0
The length of the *prakoṣṭha* is		21.0
The length of the *hasta* is		13.4

PROPORTIONS OF THE FEMALE FIGURE

The figures of important godesses are stated to be made of *madhyamadaśatāla* measurement. The vertical division of it is as follows:

	a.y
Uṣṇīṣa	1.0
From the *uṣṇīṣa* to the *pūrva-keśānta*	3.0
From the *keśānta* to the *akṣisūtra*	4.6
From the *akṣisūtra* to the *nāsānta*	4.4
From the *nāsānta* to the *hanusīmā*	4.6
Kambu, i.e. *kaṇṭha* or *gala*	4.0
From the *hikkā* to the *hṛdaya*	13.0
From the *hṛdaya* to the *nābhi*	13.0

[6] According to the Ś.R. the total width of the body, from one end to the other along the horizontal line running across the *hikkā*, pit of the neck, is only 40 *aṅgulas*, i.e. it is 12 *yavas* less than the present measurement which should be wider than the former because of the projection caused by the twist in the deltoid muscle before its insertion.

[7] Some of the *Āgama* texts allot two *aṅgulas* of length to the *korpara* separately, while many of the texts do not. In fact this separate allotment is not needed because of its nature or form, as is necessary in case of the *jānu*. Whatever the virtue or defect of this allotment, we must deal with it, for it is prescribed in the texts on which our discussion is based.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

	a.y
From the *nābhi* to the *yoni* (i.e. *liṅgamūla*)	13.0
The height of the *ūru*	26.0
The height of the *jānu*	4.0
The height of the *jaṅghā*	26.0
Pāddocca or the height of the *pārṣṇi*	4.0
The total height in *aṅgulas*[8] is	121.0

i.e. 120/12=10 *tālas.*

The following are the measurements of the width at some important points in the female figure:

	a.y	*a.y*
The distance from one *kakṣā* to the other, is	17.0	
while the width of the each *bāhumūla* is	7.0	
and thus the total width of the chest including two *bāhumūlas* along the horizontal line running across the *kakṣāmūlas*, is		31.0
The width of the *madhya* or *madhyadeśa* i.e. *madhyodara* is		11.0
The width of the *kaṭi* from one end to the other is		24.0
The width of the *ūrumūla*, from one end to the other is		12.0

These are the measurements of the *uttama* and *madhyama daśatāla* figures which are of importance in connection with the problems of the construction of the armature. With this background we now turn to the details of the preparation of the *śūlas*.

[8] Ten *tālas* should contain only 120 *aṅgulas*, but according to the account found in the printed texts there is one extra *aṅgula*, which needs investigation.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

Chapter VIII

THE SULALAKSANA OR THE PROCESS OF PREPARATION OF THE COMPONENT PARTS OF THE ARMATURE

EXPLANATION OF THE WORD SULA

The *śūlas* are also occasionally mentioned as *daṇḍas*, but only in compound words such as *vaṃśadaṇḍa*, *kaṭidaṇḍa*, *vakṣodaṇḍa*, etc. Both *śula* and *daṇḍa* generally mean stake or rod, but in this context these translations will not do, as in many cases the *śūlas* have four planes. It seems, therefore, that there is no possibility of translating either word but to explain the both to be a component part of the armature. The *śūlas* are separately named in the following way, depending on the limb or the region of the body inside which they lie.[1]

EXPLANATION OF THE NAMES OF THE DIFFERENT SULAS

Vaṃśadaṇḍa, literally the stick representing the vertebral column, see Pl. I (at the centre; second longest of all the items). Sometimes it is also called *Brahmadaṇḍa*.[2] The word *Brahman* means either one of the Hindu trinity (whose function is the creation of the universe) or the Real, i.e. Supreme God, also mentioned as the Universal Soul. As such, neither of these connotations has anything to do here. In either of the aforesaid senses it stands for that which is basic. Thus it is one of the cases to exemplify the popular Hindu habit of referring to anything basic as *Brahman*. Here the noteworthy point is not the habit of a cultural group, but the meaning driven at by this expression. It reveals the fact that the ancient modellers were fully aware of the highest importance of this component or *śūla* among all others which make the armature.

Vakṣodaṇḍa,[3] the stick lying across the chest, see Pl. I (at the top in the central place).

Kaṭidaṇḍa, the stick lying across the hip, see Pl. I (lowest central place).

[1] In describing the essentials of the *śūlas* and the method of their assemblage there is much agreement among the texts. Whatever disagreement one notices relates mainly to the measurements of the *śūlas*, and this is inevitable as the texts vary in their prescriptions regarding the major and minor proportions of the images, which determine the measurements of the *śūlas*. So these different accounts add nothing essential to our understanding of the technique.

[2] For instance, see V.A.K., M. edn., p. 85 and T. edn., p. 43.

[3] This is the reading always found in the MS., but in all the other texts this is often mentioned as *pakṣadaṇḍa*. It seems to us that the reading *pakṣadaṇḍa* is incorrect in spite of its frequent occurrence.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

Ūruśūla, the *śūla* representing the bone of the thigh, viz. femur, see Pl. I (lower row, on the right side of the photograph as well as at the corresponding place on the left side, or the second from the outside).

Jaṅghāśūla, the *śūla* representing the bones of the shank, viz. tibia and fibula, see Pl. I (lower row, the second from the right side of the photograph as well as at the corresponding place on the left, or the third from the outside).

Talaśūla, the *śūla* representing the bones of the foot such as talus, calcaneum, navicular, cuboid, cuneiforms and, to some extent, the metatarsals, see Pl. I (lower row, the third from the outside on the right side of the photograph, or the fourth from the outside on the left side. To the upper surface of these *śūlas* the copper plates are affixed, which are seen in the photograph immediately above the same. Likewise the copper plates are also used in the ears as support, which are seen at the top of the photograph on both sides of the *vakṣodaṇḍa*).

Bāhuśūla, the *śūla* representing the bone of the arm or upper arm, viz. humerus, see Pl. I (upper row, on the right side of the photograph as well as at the corresponding place on the left side, or the second from the outside).

Prakoṣṭhaśūla or *prabāhuśūla*, the *śūla* representing the bones of the lower arm, viz. ulna and radius, see Pl. I (upper row, second from the right side of the photograph as well as at the corresponding place on the left side, or the third from the outside).

Pārśvadaṇḍa, the stick lying between the *vakṣodaṇḍa* and the *kaṭidaṇḍa* by the side of the *vaṃśadaṇḍa* and which may be taken to represent the ribs, see Pl. I (upper row, the third from the outside on the right side of the photograph, or the fourth from the outside on the left side).

Upaśūla, literally subsidiary *śūla*, that is to say the *śūla* used as support, often at the back or, according to the need, at some other part of the image. In fact, sometimes it is also termed as *ādhāra*[4] (i.e. *ādhāraśūla*) meaning on which something rests, or to put it in a better way, that which holds; thus its function is specified to be support, see Pl. I (on the extreme left side of the photograph, this is to be used in standing and sitting postures, while a few of the same kind are also employed in reclining posture, as in Pl. VII, Fig. 17, though smaller in length or height).

Kīla, nail, see Pl. I (upper left corner of the photograph; being attached to the *upaśūla*).

Śikhā, usually means peak or end, but here it denotes a projecting part which serves the purpose of making joints. This is of two kinds — *vakraśikhā* and, implicitly, *avakraśikhā* or *ṛjuśikhā*. Of these, the former means a hook which takes the other

[4] See, for example, V.A.K., M. edn., p. 85 and T. edn., p. 43.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

śūlas in joining, see Pl. I (on both ends of the *vakṣodaṇḍa* at the top of the photograph or on both ends of the *kaṭidaṇḍa* at the bottom; the same can be seen more distinctly in Pl. VII, Fig. 16). The latter denotes a straight piece. As such it comes to mean two things according to the Sanskrit terminology adopted in this branch of science. The first is tenon, see Pl. I (at the upper ends of the two *jaṅghāśūlas* and two *prakoṣṭhaśūlas* or at both ends of the two *pārśvaśūlas*) and the second is the sides of a mortice, see Pl. I (lower end of the *bāhuśūla*, in the upper row, on the right side of the photograph and at the lower end of the *ūruśūla*, in the lower row, on the left side of the photograph or see also at the top of the *upaśūla*).

These are the *śūlas* with which the armature is constructed.[5] These are all made of well-seasoned wood, taken from the middle portions (i.e. *sāra*) of certain varieties of selected trees. The different measurements of the *śūlas* are determined on the basis of the system of measurement in which the figure is intended to be made. The characteristics, including the measurements, of the different *śūlas* will now be explained. While other characteristics are common to the *śūlas* of all the images of different proportions, the measurements given below correspond only to that of the *uttamadaśatāla* system given in the last chapter, as they will be described on the basis of this system. Their correspondence, however, is not always exact in so far as the length or height is concerned, but rather approximate, as shall be pointed out whenever necessary, for the simple reason that the *śūlas* lie hidden in the image.[6]

MEASUREMENTS AND DESCRIPTION OF THE DIFFERENT SULAS

Note

As has been explained in the last chapter, the system of measurement to be followed here is a relative one, i.e. any desired length can be considered to be an aṅgula, a basic unit in the scale of measurement. For the sake of convenience we have, therefore, taken one quarter of an English inch as an aṅgula in this experiment. Hence by dividing the total measurement, say the length — as found in the illustrations, particularly in Pl. I — of any of the śūlas into the number of parts equal to the prescribed aṅgulas of the length of that particular śūla, one may get a rough scale. It will be a rough scale, because there is a possibility for slight differences

[5] These are the essential or basic ones according to the K.Ś as well as the other texts. The latter, however, mention a few more *śūlas* such as the *maulidaṇḍa* and others. We shall explain them only in the context, as they are not basic ones.

[6] For all details connected with this topic see K.Ś., pp. 243-46 and Ś.R., pp. 83-87. Unless there is a special need, no references will be given in each case.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

caused by the perspective effects depending on the angle from which the photograph was taken.

a=*aṅgula*, *y*=*yava*

a. *y*

1. The length of the *vaṃśadaṇḍa* is equal to that of the upper half of the body, i.e. from the *liṅgamūla* to the *śikhā* or the top of the head[7] .. 62.0

As explained already, the *vaṃśadaṇḍa* is a stick representing the vertebral column; if so, it cannot be as long as described here, because the vertebral column in living bodies generally ends at the lower edge of the nose. But one need not take it so literally, for, after all, it is a technical device, i.e. if it is not extended in this way, there would be nothing in the rest of the head portion to serve as a firm basis. Similarly, two more points related to our experiment should be noted in this context to avoid misunderstanding.

(*i*) The prescribed length of 62 *aṅgulas* for the *vaṃśadaṇḍa* may create some difficulty in certain figures — unless they are made to have high head-dress — because it reaches the highest point in the total height of image and there cannot be any space for finishing or even for modelling. For this reason we have left out 2 *aṅgulas* at the top, though that much space may not be a technical necessity (i.e. we have taken only 15″ instead of 15½″). In the case of gods and goddesses, who are often, if not invariably, represented to wear the crowns, head-gears or similar objects this full length of 62 *aṅgulas* would not be of any problem, for an additional *śūla*, as a base for crown, etc., is attached to it. This is the reason for which the *Āgama* texts, concerned with religious images, prescribe the entire or original length of 62 *aṅgulas*, or for that matter, some of the texts prescribe to make the *śūla* or *daṇḍa* of the crown along with the *vaṃśadaṇḍa* without any joint at all.[8]

(*ii*) The figure of the *vaṃśadaṇḍa* found in the Pl. I as well as in Pl. VII, Fig. 16 is meant for an image in sitting posture, which requires an additional measurement of (4+4) eight *aṅgulas*, as pointed out in the 5th of the following paragraphs (this apart). This additional (4+4) measurement is indicated in the illustrations by two cuts or engraved lines running across the total width of the *vaṃśadaṇḍa* at its lower end. So the real length of the *vaṃśadaṇḍa* of the

[7] Instead of the reading *śuddhakāyasamam* in the printed version of the K.Ś., p. 243, verse 1b, the MS. gives the reading *ūrdhvakāyasamam*, which is correct. In fact all the texts show a tendency to prescribe the length of the *vaṃśadaṇḍa* as equal to the upper half of the body: see V.A.K., M. edn., p. 80; T. edn., p. 41; K.J.K., p. 60 and S.A.A., p. 64. So the reading *hikkādhaḥkāyatulyam*, found in the Ś.R., p. 83, verse 3b, is faulty, as is clear also from the succeeding statements of the same text (see verse 5).

[8] Vide e.g. V.A.K., M. edn., p. 81 and T. edn., p. 42, though the readings are somewhat in a confused state.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

a. y

standing and reclining figures should be imagined or it may be found (minus 2 *aṅgulas* at the top as stated in the above Para.) in Pl. II, etc. and in Pl. VII, Fig. 17, where this additional part was cut out.

2. The width of the *vaṃśadaṇḍa* at its bottom should be one fourth of the total width of the *madhyodara* or *madhya*, that is to say,[9] 4.1

3. The width of the *vaṃśadaṇḍa* at its end is one eighth less than the width at its bottom, that is 3.4

There are two possibilities of shaping the *vaṃśadaṇḍa*: It may be made from the bottom to the *nābhi* in a square, from the *nābhi* to the *hikkā* in an octagonal and from the *hikkā* to the end in a round form. (This is the method we have adopted in our experiment, see Pls. I, II and VII). Alternatively the whole of it may be made only in round form.[10]

Whichever of these two alternatives is adopted, the depth of the *vaṃśadaṇḍa* corresponds to the width throughout its course, because the depth equals the width in all these forms.

When the statue is to be built in a sitting posture the *vaṃśadaṇḍa* should be made longer than the normal length of sixty-two *aṅgulas*. The extra part measures eight *aṅgulas* which should be kept at its lower end in order to serve two purposes, as shall be fully explained in chapter X, when the construction of

[9] As shown in Ch. VII, the *madhyodara* measures 16½ *aṅgulas* from one end to the other.

[10] As the K.Ś. does not add any further details we are to understand that according to this text the two alternatives could be adopted for standing (*sthānaka*), sitting (*āsana*) and reclining (*śayana*) postures. In this matter, the other texts show some differences.

The V.A.K. says (M. edn., p. 80; T. edn., p. 41) that the *vaṃśadaṇḍa* for a Viṣṇu image should be made according to the first alternative, but in the case of all other gods it should be made in a square form only. In keeping with the latter statement, this text says elsewhere that "*devyoḥ* (Śrī and Bhū) *śūlaṃ caturaśram*" (M. edn., p. 81; T. edn., p. 42). If different forms are prescribed for different postures we can understand it to have some sort of technical significance, but it is difficult to grasp why different shapes should be adopted according to the classification of gods.

The K.J.K. mentions two theories: according to one authority the whole *vaṃśadaṇḍa* should be made in a square, octagonal and round form respectively, when the image is intended to be made in standing, sitting and reclining postures while according to the other authority (viz. Ātreya) it should be made by adopting the first alternative which implies that this *śūla* should be made in this way irrespective of the posture. (For all these details see p. 60. The treatment of the different *śūlas* as available in print is clumsy and it seems to have been mixed up.)

If a seemingly general statement found in print is reliable, then, according to the S.A.A. (p. 64, verses 2-3) not only the *vaṃśadaṇḍa*, but all the *śūlas* should be made in a square, octagonal and round form respectively according to whether the image is to be built in a standing, sitting and reclining posture. But this statement does not seem reliable in view of the fact that this text mentions only the length and periphery of all the *śūlas*, except of the *kaṭi*- and *vakṣo-daṇḍas*, which implies that according to this text the *vaṃśadaṇḍa* should also be made in a round form. Perhaps this statement is made only in order to mention the prevailing alternative method. In any case it needs further investigation.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

a.y

the armature is discussed (see Pl. I and Pl. VII, Fig. 16). Thus, in a sitting posture, the total length of the *vaṃśadaṇḍa* would be seventy *aṅgulas*.

4. The length of the *vakṣodaṇḍa*, including a *śikhā* at each end of it, is .. 32.0
(See Pl. I, etc., in particular Pl. VII, Fig. 16.)

5. The depth of the *vakṣodaṇḍa* at its middle is either 6.4
or[11] 7.4
(The latter was adopted in our experiment.)

6. The width of the *vakṣodaṇḍa* is half its depth, that is, either 3.2
or 3.6

7. Both the ends of the *vakṣodaṇḍa* should taper and each of these tapering ends in depth measures 4.0

8. In the middle of the *vakṣodaṇḍa*, i.e. in its depth as well as length, a hole (*chidra*) should be made which measures 3.4

This is suggested on the basis of the diameter of the *vaṃśadaṇḍa* at its top, but actually it may be slightly bigger, for this *daṇḍa* is attached to the *vaṃśa-daṇḍa* below the *hikkā*, where its diameter would be slightly greater. It is, therefore, better to make this hole carefully, and this should be examined often to make sure that it fits tightly without coming down from its prescribed point. This care is all the more necessary in view of the fact that no nails should be used to fix it.

9. The length of the *kaṭidaṇḍa*, including a *śikhā* at each end of it, is .. 16.0
(See Pl. I, etc., in particular Pl. VII, Fig. 16.)

10. The depth of the *kaṭidaṇḍa* is 8.0

11. The width of the *kaṭidaṇḍa* is 4.0
(It should be noted that the width of the *kaṭidaṇḍa* measures half its depth as in the case of the *vakṣodaṇḍa*.)

12. In the middle portion of the depth of the *kaṭidaṇḍa* a hole should be made measuring[12] 4.0

[11] According to the reading found in the Ś.R. (p. 83, verse 6b) this is 7 *aṅgulas* only.

[12] Here a point may be mentioned concerning the *kaṭidaṇḍa* and the *vakṣodaṇḍa*. When we stand in front of the armature after all the *śūlas* have been assembled in their proper places, we face the plane that is described in the texts as the depth of these two *śūlas*. From this point of view this plane must be called the width and similarly the plane which the texts describe as the width should be called the depth. We have, therefore, explained these terms accordingly, i.e. by altering the words.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

a. γ

What has been observed at the end of the description of the *vakṣodaṇḍa*, i.e. item 8, applies here too.

At both the ends of the *vakṣodaṇḍa*, and the *kaṭidaṇḍa*, hooks (*śikhās*) should be made for the purpose of joining the *śūlas* of the arms and legs respectively (*hastapaddaṇḍayogārtham*). These hooks (*śikhās*) are curved like the buds of Butea Frondosa (*palāśamukula*).[13]

13. The length of the individual *śikhās* on the *vakṣodaṇḍa* that are meant for joining the *śūlas* of the arms, is 2.0
(See Pl. I or better Pl. VII, Fig. 16.)

14. The depth[14] of each *śikhā* of the *vakṣodaṇḍa* is determined by the number of arms that should be made at each end of the *vakṣodaṇḍa* in accordance with the character of the deity, for many Hindu gods are stated to have more than two arms and this number often varies according to the different aspects of the gods, between one and eight at each side. So the total depth of the end of the *vakṣodaṇḍa* (i.e. 4 *aṅgulas*) should be divided into equal parts by the number of arms required for a given deity and the resulting space must be adjusted between the *śikhās* of the *vakṣodaṇḍa* i.e. their depth as well as the depth of the *bāhudaṇḍa* at its top. It may be, however, observed that this does not seem to be a good solution.

15. The length of the *śikhā* at each end of the *kaṭidaṇḍa* that is meant for joining the *ūruśūla* is 3.0
(See Pl. I or better Pl. VII, Fig. 16.)

16. The width of the *śikhā* of the *kaṭidaṇḍa* is 1.4

17. The depth of the same is 1.4
So the *śikhās* of the *kaṭidaṇḍa* are round (*suvṛtta*).

It should be mentioned that the 32 and 16 *aṅgulas* of the respective measurements of the *vakṣodaṇḍa* and the *kaṭidaṇḍa* include the measurements of the *śikhās* lying at both their ends.[15]

[13] The K.Ś. mentions it only as *vakraśikhā*, but the K.J.K. (p. 60) and the S.A.A. (p. 65) specify the curve with the similes, "*palāśamukulopamam*" and *vakramaṅkuśavatkuryāt*" respectively. Although the objects of comparison in the last-mentioned two books is different, the suggested shape is the same, for both objects are similar in form. Undoubtedly the K.Ś. also suggests the same by the use of the adjective *vakra*, as is proved by the phrase of the S.A.A., viz. *vakramaṅkuśavatkuryāt*.

[14] Here too, as in the case of the *kaṭidaṇḍa* and the *vakṣodaṇḍa*, we have altered the name of the plane. But the text does not mention the width (i.e. the depth according to the terminology adopted by the texts). In view of its specified shape like a *palāśamukula*, we may assume that it is a little less than half the width of the *vakṣodaṇḍa*.

[15] This becomes clear if we examine the measurements, especially those of the *kaṭidaṇḍa*. If we add the six *aṅgulas* of

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

a. γ

A similar point that deserves mention is that the *śikhās* of the *vakṣodaṇḍa* as well as *kaṭidaṇḍa*, must be executed from the respective lower planes of the two latter *śūlas* (or *daṇḍas*), as in Pl. VII, Fig. 16. This enables, without trouble, the attachment of the *bāhu-* and *ūru-śūlas* respectively to them; otherwise a difficulty may arise, as the heads of the *bāhu-* and *ūru-śūlas* lie in line with the upper plane of the *vakṣodaṇḍa* and *kaṭidaṇḍa* respectively (see Pl. II), hence there should be sufficient space above the holes made in them. Though this point is not mentioned in the texts, it is perhaps implicit.

18. Owing to the problems related to the knee (*jānu*) we must first deal with this before we discuss the measurements of the *ūruśūla*. As we have seen in chapter VII, the *jānu*, knee measures four *aṅgulas*, so the *jānuśūla* has the same length. But it is not made separately. Its length is divided into two equal parts which are added to the lower end of the *ūruśūla* and the upper end of the *jaṅghāśūla*. This arrangement increases the lengths of these two *śūlas*. To create the knee joint (*jānusandhi*) a *śikhā* should be made, which is in the form of tenon. Its length is 3.0

This measurement should again be added to the upper end of the *jaṅghāśūla* which causes a further increase in the length of the *jaṅghāśūla*. The width of the *śikhā* at the upper end of the *jaṅghāśūla* measures one third of the width of the upper end of the latter, which means roughly 1.0

At the lower end of the *ūruśūla* a mortice should be made, measuring three *aṅgulas* in length and one *aṅgula* in width which will have *śikhās* on both sides, each measuring one *aṅgula* in width. And now the *śikhā* (tenon) of the *jaṅghāśūla* should be inserted into the mortice of the *ūruśūlā*.[16]

both the *śikhās* to the 16 *aṅgulas*, we get 22 *aṅgulas* as the total measurement of the *kaṭidaṇḍa* including its *śikhās*, and this would be more than the total width of the *kaṭi*, which is only 20½ *aṅgulas* from one end to the other in the finished state of the image. Only when the *śikhās* are included in the respective measurements of 32 and 16 *aṅgulas* of the *vakṣodaṇḍa* and the *kaṭidaṇḍa* the *śūlas* of the arms and legs run more or less through the middle portions of the arms and legs as will be clear when the measurements of the *śikhās* are calculated along with those of the widths of the *śūlas* of the arms and legs, a matter to be discussed in the following pages.

[16] The passage dealing with the *jānu* and *jānusandhi* is full of corrupt readings in the printed version of the K.Ś. (p. 244, verses 16b-19) as well as in Ś.R. (p. 84, verses 18b-19). But it is found with somewhat better readings in the MS., which runs as follows:

jānumānaṃ dvidhā kṛtvā ūrujaṅghādvayorapi ||
āropayecchikhāmānaṃ tasmādāropayedbudhaḥ |
guṇāṅgulaṃ śikhāmānaṃ jaṅghādīrghobhayairyutam ||
madhyechidrasamāyuktaṃ ūrvagraṃ dviśikhānvitam |
jaṅghāmūlaṃ tribhāgaikaṃ śikhāvyāsamudāhṛtam ||

If the *jānuśūla* were to be made separately, it would weaken the armature, because it would be too small to be joined to the *ūru-* and *jaṅghā-śūlas*. So the method prescribed by the K.Ś. is technically quite important. The other

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

a.y

19. As has been mentioned in chapter VII the portion of the leg between the horizontal line running across the *liṅgamūla* and the upper edge of the *jānu* is considered to be the *ūru*; its length is 27 *aṅgulas*. But the *ūruśūla* should be made longer because of its peculiar problems. This additional length should be obtained by keeping some parts at both ends in the following way.

One should keep 2 *aṅgulas* of the additional portion at the lower end, which part, as we have just seen above, really belongs to the measurement of the *jānu*. (This additional part is not marked in Pl. I, but this can be made out roughly with the help of socket or mortice, which measures 3 *aṅgulas*). Likewise a length of 8 *aṅgulas* should be kept at the upper part of the *ūruśūla*.[17] (This is approximately suggested by its thinned out part at the top, Pl. I, or it can be precisely noticed in Pl. II, by imagining a horizontal line at the point where the *vaṃśadaṇḍa* ends). The prescription of 8 additional *aṅgulas* needs some explanation. The *ūruśūla* is to be joined to the *kaṭidaṇḍa*, the upper edge of which lies 8 *aṅgulas* and 3 *yavas* above the *liṅgamūla*, while the top of the *ūruśūla* lies just on the horizontal line running across the *liṅgamūla*, if this is only 27 *aṅgulas* long. If this is so, it cannot be joined to the *kaṭidaṇḍa* and therefore it is quite logical that an additional portion should be kept in order to make the joint of the two *śūlas* possible. (This point will be further explained in connection with the assembly of the *śūlas*). Thus the total length of the *ūruśūla* is (8+27+2=) 37.0

20. The width of the *ūruśūla* at the middle portion of the *ūru* is one third of the total width of the *ūru*. In chapter VII we have already seen that the *ūru* at its middle portion measures 13 *aṅgulas* and 6 *yavas* in width, so the width of the *ūruśūla* is roughly 4.5

21. The width of the *ūruśūla* at its end is three fourth of the above measurement, that is,[18] roughly 3.3

texts just prescribe 4 *aṅgulas* as the measurement for this *śūla* basing themselves simply on the measurement of the *jānu*, and none of them describes a technically good device like this.

[17] In the texts this is prescribed specifically in the case of images in a sitting or standing posture. But this additional portion is always needed, irrespective of the posture, and for this reason we have not mentioned the posture in our discussion. The concerning hemistich in the MS., however, runs: *āsane sakalaṃcorudīrghādūrdhvaṃ na ropayet*, the readings of which are obviously incorrect and therefore the meaning they suggest is wrong.

The V.A.K. also mentions this point but without specifying the measurement. It says only that one should allow this additional portion according to necessity. The passage runs: "*mūle śikhāsaṃyojanārthaṃ yuktyā kārayet*" (M. edn., p. 81; T. edn., p. 41).

[18] The reading *tasyāgraṃ tattribhāgaṃ syāt* found in the Ś.R. (p. 85, verse 20b) is incorrect. *Tribhāga* denotes one third, which in reference to the previous measurement means roughly 1 *aṅgula* and 4 *yavas* which is too thin to be the width of the *ūruśūla* at the end. In this place K.Ś. (p. 244, verse 21b) reads *tripāda* meaning three fourth, which is correct.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

a.γ

It should be noted that in the above cases, as well as in the two cases of the *jaṅghāśūla*, which will be treated later on, the width means the diameter, as these *śūlas* are round.

Though not specified in the texts, a point of some importance may be mentioned here. The diameter of the *ūruśūla* at its top would, on account of its tapering form, be so great that along with the *kaṭidaṇḍa* it would leave too little a space to tie the ropes and apply the clay. Hence some area must be cut out from both sides equally. Two questions arise here: (*a*) how wide and (*b*) how long this should be. Since each *śikhā* of the *kaṭidaṇḍa*, measures 3 *aṅgulas* in length, it would be better to preserve slightly less than this, precisely at the centre of the diameter of the *ūruśūla*, while the rest should be removed. It is better, when the width of the preserved area is slightly less than the length of the *śikhā* of the *kaṭidaṇḍa*, so that the *ūruśūla* rests better on the curve of the *śikhā*, as seen in Pl. II, Fig. 2 or Pl. VII, Fig. 17. So far as its length goes, it would not do, if it is made only to correspond to the width of the *kaṭidaṇḍa*, i.e. 4 *aṅgulas*, because some space between the *ūruśūla* and the *vaṃśa-daṇḍa*, is absolutely necessary, if the ropes are to be tied precisely as prescribed. It is desirable that the length of the cut-out area should be roughly 8 *aṅgulas*.

In this thinned out upper part of the *ūruśūla* a hole must be made running through a flat surface to the other, as in Pl. I. It is meant for attaching this *śūla* to the *śikhā* of the *kaṭidaṇḍa* and it should not be narrow, in which case the joint becomes tight, but it should be that much big that this *śūla* moves to any position easily. The tightening of the *ūruśūla* at a desired position must be obtained, as will be discussed in chapter X, with the help of a copper plate to be attached, copper wire and lastly with the help of the ropes to be tied. But it should be carefully so devised that when the *śikhās* of the *kaṭidaṇḍa*, with all the weight of the armature of the upper half of the body, rest on in these holes, the heads of the *ūruśūlas* must not lie above the upper surface of the *kaṭidaṇḍa*. Otherwise not only some technical difficulties may arise but also the height of the figure or legs would change (see Pls. II, Figs. 2-3 and VII, Fig. 17).

In the same way as we had to discuss the *jānuśūla* because of its special problems before explaining the *ūruśūla*, so we must also deal with the *talaśūla* first, before describing the *jaṅghāśūla*.

22. The height of the *talaśūla* at its beginning, i.e. near the ankle, is[19] .. 4.0
(See Pls. I and II.)

[19] As in the case of the lengths of the *ūru-* and *jaṅghā-śūlas*, this is not specified here, but it is not difficult to deter-

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

a. y

23. The length of the *talaśūla* is two third of the total length of the foot, which, as we have already seen in chapter VII, is 17 *aṅgulas*. So it is of 11.2

24. Again the width of the *talaśūla* at its end (i.e. front) is two third of the total width of the foot, which measures 7 *aṅgulas*, so it is 4.6
or it may be half the width of the foot,[20] in which case it is 3.4

The width of the lower plane of the *talaśūla*, at its beginning, is conjecturally[21] 3.0
while towards the top gradually it tapers.

One should make a hole in the *talaśūla* at 2 *aṅgulas* distance from the beginning, i.e. from the back of the heel.[22] To clarify it further, the centre of the diameter of this hole lies at the distance of 2 *aṅgulas* from the back. The additional portion of the *jaṅghāśūla* should be pushed through this hole. Its diameter, however, is not specified in the text, but we may presume it to be about 2 *aṅgulas*, because this is the width of the *jaṅghāśūla* at the ankle, as shall be noted below.

25. As shown in chapter VII, the *jaṅghā* measures 27 *aṅgulas*, but the *jaṅghāśūla* is not of the same length. As in the case of the *ūruśūla*, one should keep some extra parts at both ends of the *jaṅghāśūlas*. At the upper end one must keep 5 additional *aṅgulas* which, as we have noted above (item 18), really belong to the measurement of the *jānu* and the *jānuśikhā*. The latter can be distinctly seen in Pl. I, Pl. VII, Fig. 15 and also Pl. II, though not so distinctly seen as in the former two. The 2 *aṅgulas* part of the *jānu* is not marked, yet with the help of the *jānuśikhā* its length can be made out.

Similarly, at the lower end of the *jaṅghāśūla* one should keep an additional part, 4 *aṅgulas* long, which, as noted above, is meant for pushing through the hole made in the *talaśūla* (see Pl. I, where this area is marked with the lines running across). Thus the *jaṅghāśūla* in all the postures, including standing, will measure (3+2+27+4=) 36.0

mine it, because we know the measurements of the *pārṣṇi*, the height of which, as shown already in chapter VII, is 4 *aṅgulas*. This measurement is applicable in case of the *talaśūla*, since the *pārṣṇi* and the beginning of the *talaśūla* are identical.

[20] This alternative measurement is found in the Ś.R. only, p. 85, verse 24a.

[21] In the absence of specific statement in the texts, we are to infer the measurement at the heel part of the *talaśūla* on the same principle as above (item 24). Here the alternative method cannot be of use, for in that case the back of the *talaśūla* would be 2 *aṅgulas* 2 *yavas*, which is half the measurement of the finished heel of 4 *aṅgulas* 4 *yavas*, as this space is not sufficient to make a hole of 2 *aṅgulas* diameter, through which the extension of the *jaṅghāśūla* is to be passed. Hence the two third method should be adopted, according to which it is 3 *aṅgulas*.

[22] The readings found in the K.Ś. (in print as well as in MS.) are unintelligible, so we have specified this matter according to the reading available in the Ś.R.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

a.γ

If the image is to be made in standing posture one should keep, apart from the additional 4 *aṅgulas* just mentioned, 6 further *aṅgulas* at the lower end of the *jaṅghāśūla* (this area can be found in Pl. I, just below the second line running across). This additional piece of 6 *aṅgulas* is meant to be placed in the hole made in the pedestal for fixing the armature firmly, see Pl. II, Fig. 2, just below the board on which the armature is standing. Thus one should keep only in the case of a standing posture 10 additional *aṅgulas* in all at the lower end of the *jaṅghāśūla*. The total length of the *jaṅghāśūla* in a standing image should then be (3+2+27+4+6=) 42 *aṅgulas*.

26. The width of the *jaṅghāśūla* at its beginning is equal to the lower end of the *ūruśūla*, which is 3.3

27. The width of the *jaṅghāśūla* at its end, i.e. at the *gulpha*, ankle, is one third less than the width at its beginning, which comes to 2.2

In the case of the standing posture, an alternative method of preparing the *śūlas* of the legs is permitted. According to this one can make a single *śūla* for the whole leg, if so preferred, without any joint at the knee. In this case the total measurement of the *śūla* of the leg should be (8+27+4+27+4+6=) 76 *aṅgulas*.[23]

Since all the details of the *ūru-* and *jaṅghā-śūlas* came to an end with the last paragraph, certain untouched aspects of the knee joint (*jānusandhi*) may be pointed out now. Whatever posture may it be, less than 3 *aṅgulas* of long *jānuśikhā* or tenon would be insufficient to secure the joint. This prescribed length of *jānuśikhā* does not create trouble in any posture, though some small adjustments may be necessary in case the bend in the knee is great or the angle is narrow. This is because of the following facts, viz. the slightly tapering width of the *jānuśikhā* (tenon) is between 3 *aṅgulas* and 3 *aṅgulas* 3 *yavas* and the depth of the mortice at the lower end of the *ūruśūla* into which it is pushed, is also of the same dimensions. Likewise its (*jānuśikhā*) length is also 3 *aṅgulas*, which does not exceed the diameter of the lower part of the *ūruśūla* measuring 3 *aṅgulas* 3 *yavas*. Hence it cannot come out of the depth of the mortice at the end of the *ūruśūla*, see Pl. VII, right leg of the Fig. 17. Thus this whole scheme of the measurements is certainly and deliberately well thought out, though there is no explicit statement in the texts to that effect. It is a clever

[23] This statement is also found in the V.A.K. (M. edn., p. 81; T. edn., p. 41). A few lines further on the text says again that the knee and elbow joints need not be made when the arms and the legs are stretched. However this statement is not found in other texts. But it should be noted that this method has technical significance.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

a. γ

solution. If these tenons are appearing outside the socket or mortice in the Pl. VII, Fig. 15, that is because of the fact that the edges of the *jaṅghāśūlas* have touched the gradually increasing volume of the *ūruśūlas*, obstructing the further insertion of the tenons. It is in such cases as this that some adjustment is necessary, i.e., the inner edges of the *jaṅghāśūlas* must be cut out to the extent as the situation demands, the greater the bend the bigger is the cut also. The distribution of the 4 *aṅgulas* height of the *jānu* to the *ūru-* and *jaṅghā-śūlas* alike does not anyway violate the nature's rule by causing an increase in the *ūru-* and *jaṅghā-śūlas*, because it is in the nature. If the question of finishing the knee according to the shape in its bent position or the question of small adjustment in measures arises, they can be managed while applying the clay, which would have sufficient thickness in these places to allow minor adjustments.

28. In the way as the measurement of the *jānu* should be divided into two equal parts and attached to the *ūru-* and *jaṅghā-śūlas*, so also the 2 *aṅgulas*' measurement of the *korpara* should be divided into two parts and added to the *bāhu-* and *prakoṣṭha-śūlas*. This means that 1 *aṅgula* should be added to the lower end of the *bāhuśūla* and the remaining 1 *aṅgula* to the upper end of the *prakoṣṭhaśūla*. A *śikhā*, i.e. a tenon should also be made for the elbow joint (*korparasandhi*) measuring 2.0
(See Pl. I.)

The other matters are similar to those mentioned in connection with the *jānusandhi*. This means that the *śikhā*, tenon should be attached to the upper end of the *prakoṣṭhaśūla* while the width of the *śikhā* should be 00.5

As in the end of the *ūruśūla*, a mortice of 2 *aṅgulas* long and 5 *yavas* wide should be made in the central area of the lower part of the *bāhuśūla* and consequently the sides of mortice, called *śikhās* measure 5 *yavas* each, see Pl. I. The *śikhā*, tenon of the *prakoṣṭhaśūla* should be inserted into this mortice.

29. The length of the *bāhuśūla*, including the piece of 1 *aṅgula*, which originally belongs to *korpara*, but attached to its lower end now, is[24] (1+25)= .. 26.0

[24] In the K.Ś. the length of the *bāhu-* and *prakoṣṭha- śūlas*, is not given, as in the case of the *ūru-* and *jaṅghā- śūlas*. Of course the other texts — S.A.A., p. 65; K.J.K., p. 60 and V.A.K. (in M. edn. the greater part of this topic is missing, see p. 81; while in T. edn. a small part of it is missing, see p. 42) — clearly describe them. But it is not difficult to make a rough calculation of them, because we know the measurements of these limbs (see chapter VII). In principle one could guess the lengths of these *śūlas* on the basis of the measurements of the limbs themselves, but, as far as the *śūla* of the *bāhu* is concerned, some practical difficulties would arise out of this method. The upper end of the *bāhu* lies on the horizontal line running across the *hikkā* and from there it measures 27 *aṅgulas*. If the *bāhuśūla* is made in the same length, there would be no space for employing the clay and other materials in order to finish this region properly. So it seems that the *bāhuśūla* should be shorter than 27 *aṅgulas*. If so, how much?

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

a.y

30. The width of the *bāhuśūla* at its beginning is 3.0

31. The width at its end or lower part is 2.0

As in the case of the *ūruśūla* (item 21, para. 3 of this chapter) a point not specified in the texts, should be mentioned here. The diameter of the *bāhuśūla* at its top would, on account of its tapering form, be much bigger, though perhaps not so big as in the case of the *ūruśūla*. But it will not cause an impossible problem, as it does in the case of the *ūruśūla*, because here (i.e. in the region of *aṃsa*, deltoid region) there is some space to use different materials and finish. Nevertheless it would create some inconvenience and, moreover, its width, being bigger than the *śikhā* of *vakṣodaṇḍa*, obstructs good fitting. In other words on account of this greater diameter the *bāhuśūla* would not properly rest on the curved *śikhā* of the *vakṣodaṇḍa*. It is, therefore, better to cut out some piece from both sides equally and to retain that much area at the centre which in width measures slightly less than the length of the *śikhā* of the *vakṣodaṇḍa*, so that a tiny part of the *śikhā* would be visible at the outside of the head of the *bāhuśūla*. Similarly the length of this cut-out piece equals the width of the *vakṣodaṇḍa* (i.e. either 3 *aṅgulas* 2 *yavas* or 3 *aṅgulas* 6 *yavas*). These details can be seen in Pls. I, II and VII, Figs. 15 and 17.

A hole must be made in this thinned-out area of the upper part of the *bāhuśūla* for the attachment of this *śūla* to the *śikhā* of the *vakṣodaṇḍa* in the same way as in the case of the *ūruśūla* discussed in item 21, para. 4 of this chapter. But the only difference that must be noted is that when the *bāhuśūla* is hung on the said *śikhā*, the head of the *bāhuśūla* should not lie above the upper surface of the *vakṣodaṇḍa*, see Pl. II, Figs. 2-3 and Pl. VII, Figs. 15 and 17.

32. The length of the *prakoṣṭhaśūla*, is (2+1+21=) 24.0

33. The width of the *prakoṣṭhaśūla* at its beginning is equal to the lower end[25] of the *bāhuśūla*, i.e. 2.0

34. The width of the *prakoṣṭhaśūla* at its end or lower part or at the *maṇibandha* is half the width of its beginning, i.e. 1.0

It should be noted here that what is described as width in the case of the *bāhu*- and

As we shall see in chapter X the upper edge of the *vakṣodaṇḍa*, to which the *bāhuśūla* is joined, lies 2 *aṅgulas* below the said line. So we may conclude that the *bāhuśūla* should be 25 *aṅgulas* without a piece of one *aṅgula*, which belongs to *korpara* and which is attached to its lower part and thus its total length is 26 *aṅgulas*.

[25] In the printed version of K.Ś. (p. 244, verse 26a) an alternative measurement of two and a half *aṅgulas* is given, but this and a few other statements are missing in the MS. as well as in the Ś.R.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

a. y

prakoṣṭha-śūlas is in reality their diameter, as is the case with the *śūlas* of the legs. We have to presume this, as no measurement for their depth[26] is given.

Only the *Kāsyapajñānakāṇḍa* states that the *prakoṣṭhaśūla* should gradually taper like a *sruva*. This simile indicates also a little curve in the *prakoṣṭha* which is easily noticeable in nature. This curve is brought out in our experiment and can be noticed in Pls. I, II, IV and even in Pl. V.

35. The *pārśvadaṇḍas* which lie on both sides of the *vaṃśadaṇḍa* are naturally two, and each consists of two *śikhās*, one at either end. The length of each *pārśvadaṇḍa* is equal to the distance between the *kaṭidaṇḍa* and *vakṣodaṇḍa*. We have seen that the width of the *vakṣodaṇḍa* could be either 3 *aṅgulas* 2 *yavas* or 3 *aṅgulas* 6 *yavas*. If the former is the case, then the length of the *pārśvadaṇḍa* is 26.4
and in the latter case it is 26.0
(See Pl. I.)

It should be noted here that this length does not include its *śikhās*. The text does not give any measurement for the *śikhās*, so one has to make them according to convenience.[27]

36. The width of each *pārśvadaṇḍa* is 1.4

37. The depth of each *pārśvadaṇḍa* is equal to that of the *vaṃśadaṇḍa*, i.e. .. 4.0

38. The beginnings of the *pārśvadaṇḍas* lie on the *kaṭidaṇḍa*, on both sides of the *vaṃśadaṇḍa*, and in each case[28] the distance between the edges of the *vaṃśa-* and *pārśvadaṇḍas*, is 1.4

[26] The K.J.K. (p. 60) and the S.A.A. (p. 65) mention this point clearly as the *nāha*.

[27] On this point the S.A.A. (p. 65) only says that one has to join the *pārśvadaṇḍas* to the *kaṭi-* and *vakṣo-daṇḍas*, while the V.A.K. (M. edn., p. 80; T. edn., p. 41) clarifies it rather better. But the readings are incorrect. So far as they are intelligible they seem to mean this: One should make holes (*nimna*) in the *kaṭi-* and *vakṣo-daṇḍas* on either side of the *vaṃśadaṇḍa* and fix the *pārśvadaṇḍas* into them. But further details are missing. The K.J.K. states specifically (p. 60) that each *śikhā* at the lower and upper ends of the *pārśvadaṇḍas* measures 2 *aṅgulas* (implicitly, in length).

[28] The passage concerning this matter is found in the MS. with some better readings:

pārśvayorvaṃśadaṇḍasya pārśvadaṇḍe tu yojayet ||
kakṣāntarantu taddīrghaṃ tadvyāsaṃ tu guṇāṅgulam|
vaṃśadaṇḍasamaṃ nīvraṃ ūrdhvādhastācchikhānvitam ||
agrau tu vakṣodaṇḍe tu mūlau tu kaṭidaṇḍake|
yojayet sudṛḍhaṃ chidre guṇāṃśaṃ vyantarānvitam||
agrau mūlau niruddhaṃ syāt pārśvavaṃśadvayorapi|

We have taken the measurements *guṇāṅgulam* and *guṇāntaram* as applying to both *pārśvadaṇḍas*, on the basis of the dual number, *pārśvadaṇḍe*, which is correct. If these are not understood in this way, then each *pārśvadaṇḍa* and the distance between it and the *vaṃśadaṇḍa* should be stated to measure 3 *aṅgulas*. If so, both sides together would

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

a.y

The ends of the *pārśvadaṇḍas*, however, cannot be fixed to the *vakṣodaṇḍa* at the distance of the 1½ *aṅgulas*, on each side, from the outer edge of the *vaṃśadaṇḍa*, as found in Pl. VII, Fig. 16, for, in that case, there cannot be sufficient space to let, as shall be noted below, pass the *śikhās* (each measuring roughly 2 *aṅgulas* in width) of the *ādhāraśūla* below the *vakṣodaṇḍa*. This difficulty did not occur to us, when we formerly[29] explained that the *kaṭi-* and *vakṣo-daṇḍas* and two *pārśvadaṇḍas* would form a rectangular frame in the trunk region. This proved impossible when the experiment of modelling an image was undertaken. On account of this, we went again to the other extreme when we fixed the *pārśvadaṇḍas* towards the ends of the *vakṣodaṇḍa*, viz. their outer edges at the distance of 12 *aṅgulas* from the centre of the *vakṣodaṇḍa* (see Pls. II, IV, and VII, Figs. 15 and 17). As a result we encountered another difficulty while working with the clay, as this in its turn created a good deal of trouble in finishing the regions of the ribs, i.e. sides, though we managed this somehow. If the *pārśvadaṇḍas* are fixed to the *vakṣodaṇḍa* as their outer planes would fall at the distance of 2 *aṅgulas* 4 *yavas* inside the *kakṣās*, i.e. armpits, lying 22 *aṅgulas* apart, it may prove convenient in both ways, viz. in fixing the *vaṃśadaṇḍa* in between the *śikhās* of the *ādhāraśūla* and in modelling the sides of the figure. In other words they are so fixed that their inner edges fall at the distance of [11 (from the centre of the *vakṣodaṇḍa* to the *kakṣās*) - 2.4 + 1.4 (width of the *pārśvadaṇḍa*) =] 7 *aṅgulas* from the centre of the *vakṣodaṇḍa* and thus they remain at the distance of 14 *aṅgulas* from each other.

39. The hands, feet and ears should be made of *tāmrapaṭṭa*, copper plate, see Pls. I, II, IV, Fig. 10 and VII, Figs. 15 and 17.

Although the texts mention nothing more it is perhaps worthwhile to add something with regard to the use of copper plate for the hands, feet and ears. We have already noted that wood is prescribed for the *śūlas* of the feet, so copper plate is not absolutely necessary in this case. However, the specific prescription to use copper plate also gives the impression that it was an ancient practice to employ copper plate in addition to wooden *śūlas*. With regard to the methods of applying these two materials we can only conjecture. As the wooden *śūlas* with their prescribed measurements do not cover the whole feet

come to 12 *aṅgulas*. Again these 12 *aṅgulas* added to the four *aṅgulas*' width of the *vaṃśadaṇḍa*, would make 16 *aṅgulas*. The *kaṭidaṇḍa* without the *śikhās* measures only 10 *aṅgulas*, so that it would be impossible to fix these *daṇḍas* to it. According to our interpretation these *daṇḍas* together with the *vaṃśadaṇḍa* would occupy only 10 *aṅgulas*' space which is the exact length of the *kaṭidaṇḍa* without the *śikhās*. The meaning of the last hemistich quoted above is not clear to us.

[29] I.T.T., especially p. 124 and also p. 111, etc.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

a.y

we may suppose that the copper plates should be used for the whole length of the feet including the toes and that they should be fixed onto the wooden *śūlas*. This would have a practical purpose, for the copper plates lying inside the feet would prevent easy breakage of the toes, which might otherwise be quite possible.

As for the hands it should be noted that the copper plates are to be used for the whole hand including the fingers, though this is somewhat difficult, because the fingers have greater scope for mobility than the toes. Without the copper plates there would be nothing to protect them against breakage. The plate employed at least for the hands should be sufficiently thick (but not like in the illustrations). Otherwise the bends or curves, if any, would prove difficult to maintain.

The ears are too thin to use wood as their support and at the same time, being projecting thin parts, they badly need some hard material for support, which should also be thin enough to lie inside the thickness of the ears. So copper plate is well-chosen for this purpose.

These are the *śūlas* which lie inside the body proper and support the image. All except a few represent the bones of a living body.

40. Apart from these there is one more *śūla* which, lying chiefly outside the body of the image is external. This is called the *upaśūla* or *ādhāraśūla*, which, from the functional point of view, means what is called "support" in modern terminology, see Pls. I, II, IV, VI, Figs. 13 and 14.

This *upaśūla* begins from the central area in the thickness of the wall behind the image and extends as far as the anterior edge of the *vakṣodaṇḍa*. Apart from this way its length cannot be stated in a definite number of *aṅgulas*, because the distance between the wall and the image varies according to the system followed in determining the place of the image in the temple, or *sanctum sanctorum*.

41. The width of the *upaśūla* is 8.0

42. Its thickness or depth is 4.0

43. In order to join the *vaṃśadaṇḍa* to the *upaśūla*, a mortice or socket (*chidra*) should be made at the end of the latter in the middle portion of its width. The width of the mortice should be equal to the width of the *vaṃśadaṇḍa* and this mortice should have one *śikhā* on each side. The part of the *vaṃśa-daṇḍa* which is to be joined to the *upaśūla* measures about 3¾ *aṅgulas*, so the mortice would have the same width, i.e. 3.6

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

a.y

44. If we add half the depth of the *vaṃśadaṇḍa*, (i.e. 1 *aṅgula* and 7 *yavas*) to half of the depth of the *vakṣodaṇḍa*, i.e. either 3¼ or 3 *aṅgulas* and 6 *yavas*, we get the length of the socket or mortice to be made in the *upaśūla*. Thus, if the *vakṣodaṇḍa* is made with 6 *aṅgulas* and 4 *yavas*' depth, the length of this mortice would be 5.1
and if the *vakṣodaṇḍa* is made with 7 *aṅgulas* and 4 *yavas*' depth, then, this socket would be 5.5

Needless to say, that both *śikhās* lying alongside the mortice measure the same as the mortice.

45. In each *śikhā* of the *upaśūla* a hole should be made at the point, in front of the *vaṃśadaṇḍa* in order to fix the latter in the socket or mortice by pushing a nail (*kīla*) through it. That is, if the *vakṣodaṇḍa* is 6 *aṅgulas* and 4 *yavas* in depth, the holes in the *śikhās* should be made 1 *aṅgula* and 3 *yavas* before the end, and if the *vakṣodaṇḍa* is 7 *aṅgulas* and 4 *yavas* in depth, the holes in the *śikhās* should be made 1 *aṅgula* and 7 *yavas* before the end.

These are the *śūlas* in detail. In all, apart from the *upaśūla*, there are 21 pieces inside the body of the image. Of these, 6 are copper sheets and the rest are of wood. Of these 15 wooden pieces, the eight belonging to the two *bāhus*, two *prakoṣṭhas*, two *ūrus* and two *jaṅghās* are round and the 4 that belong to the *vakṣas*, *kaṭi*, and two *pārśvas* have four perfectly flat planes. Three remain, and of these the 2 *pādaśūlas* or *talaśūlas* have a perfectly flat surface in the lower part and a somewhat round surface above, while the *vaṃśadaṇḍa* has three possible shapes: square, octagonal and round. If we include the *upaśūla* which lies outside the body and supports it, then the number of the wooden *śūlas* increases to 16 and the total increases to 22. When the legs are completely stretched, one may, if so desired, make only one *śūla* for each leg instead of two. In this case the above numbers decrease by two.

Some of the other texts prescribe more than one *upaśūla*, in which case the total number of *śūlas* increases accordingly. Occasionally one notices a further increase in the number of *śūlas* for two reasons. Firstly, some texts prescribe more than two *bāhu-* and two *prakoṣṭha-śūlas*, because certain deities have more than two arms. Secondly, an additional *śūla* called *maulidaṇḍa* meant for creating a crown[30] (*kirīṭa*), is mentioned. But all these matters are special problems confined to particular deities, and we may leave

[30] The V.A.K. counts the number of *śūlas* on the basis of the posture of the images, but owing to incorrect readings these do not tally with the *śūlas* actually prescribed. For all these details see M. edn., pp. 82-3; T. edn., pp. 42-3. For the *maulidaṇḍa* see also the K.J.K., p. 60.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

a.y

we may suppose that the copper plates should be used for the whole length of the feet including the toes and that they should be fixed onto the wooden *śūlas*. This would have a practical purpose, for the copper plates lying inside the feet would prevent easy breakage of the toes, which might otherwise be quite possible.

As for the hands it should be noted that the copper plates are to be used for the whole hand including the fingers, though this is somewhat difficult, because the fingers have greater scope for mobility than the toes. Without the copper plates there would be nothing to protect them against breakage. The plate employed at least for the hands should be sufficiently thick (but not like in the illustrations). Otherwise the bends or curves, if any, would prove difficult to maintain.

The ears are too thin to use wood as their support and at the same time, being projecting thin parts, they badly need some hard material for support, which should also be thin enough to lie inside the thickness of the ears. So copper plate is well-chosen for this purpose.

These are the *śūlas* which lie inside the body proper and support the image. All except a few represent the bones of a living body.

40. Apart from these there is one more *śūla* which, lying chiefly outside the body of the image is external. This is called the *upaśūla* or *ādhāraśūla*, which, from the functional point of view, means what is called "support" in modern terminology, see Pls. I, II, IV, VI, Figs. 13 and 14.

This *upaśūla* begins from the central area in the thickness of the wall behind the image and extends as far as the anterior edge of the *vakṣodaṇḍa*. Apart from this way its length cannot be stated in a definite number of *aṅgulas*, because the distance between the wall and the image varies according to the system followed in determining the place of the image in the temple, or *sanctum sanctorum*.

41. The width of the *upaśūla* is 8.0

42. Its thickness or depth is 4.0

43. In order to join the *vaṃśadaṇḍa* to the *upaśūla*, a mortice or socket (*chidra*) should be made at the end of the latter in the middle portion of its width. The width of the mortice should be equal to the width of the *vaṃśadaṇḍa* and this mortice should have one *śikhā* on each side. The part of the *vaṃśa-daṇḍa* which is to be joined to the *upaśūla* measures about 3¾ *aṅgulas*, so the mortice would have the same width, i.e. 3.6

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

a.y

44. If we add half the depth of the *vaṃśadaṇḍa*, (i.e. 1 *aṅgula* and 7 *yavas*) to half of the depth of the *vakṣodaṇḍa*, i.e. either 3¼ or 3 *aṅgulas* and 6 *yavas*, we get the length of the socket or mortice to be made in the *upaśūla*. Thus, if the *vakṣodaṇḍa* is made with 6 *aṅgulas* and 4 *yavas*' depth, the length of this mortice would be 5.1
and if the *vakṣodaṇḍa* is made with 7 *aṅgulas* and 4 *yavas*' depth, then, this socket would be 5.5

Needless to say, that both *śikhās* lying alongside the mortice measure the same as the mortice.

45. In each *śikhā* of the *upaśūla* a hole should be made at the point, in front of the *vaṃśadaṇḍa* in order to fix the latter in the socket or mortice by pushing a nail (*kīla*) through it. That is, if the *vakṣodaṇḍa* is 6 *aṅgulas* and 4 *yavas* in depth, the holes in the *śikhās* should be made 1 *aṅgula* and 3 *yavas* before the end, and if the *vakṣodaṇḍa* is 7 *aṅgulas* and 4 *yavas* in depth, the holes in the *śikhās* should be made 1 *aṅgula* and 7 *yavas* before the end.

These are the *śūlas* in detail. In all, apart from the *upaśūla*, there are 21 pieces inside the body of the image. Of these, 6 are copper sheets and the rest are of wood. Of these 15 wooden pieces, the eight belonging to the two *bāhus*, two *prakoṣṭhas*, two *ūrus* and two *jaṅghās* are round and the 4 that belong to the *vakṣas*, *kaṭi*, and two *pārśvas* have four perfectly flat planes. Three remain, and of these the 2 *pādaśūlas* or *talaśūlas* have a perfectly flat surface in the lower part and a somewhat round surface above, while the *vaṃśadaṇḍa* has three possible shapes: square, octagonal and round. If we include the *upaśūla* which lies outside the body and supports it, then the number of the wooden *śūlas* increases to 16 and the total increases to 22. When the legs are completely stretched, one may, if so desired, make only one *śūla* for each leg instead of two. In this case the above numbers decrease by two.

Some of the other texts prescribe more than one *upaśūla*, in which case the total number of *śūlas* increases accordingly. Occasionally one notices a further increase in the number of *śūlas* for two reasons. Firstly, some texts prescribe more than two *bāhu*- and two *prakoṣṭha-śūlas*, because certain deities have more than two arms. Secondly, an additional *śūla* called *maulidaṇḍa* meant for creating a crown[30] (*kirīṭa*), is mentioned. But all these matters are special problems confined to particular deities, and we may leave

[30] The V.A.K. counts the number of *śūlas* on the basis of the posture of the images, but owing to incorrect readings these do not tally with the *śūlas* actually prescribed. For all these details see M. edn., pp. 82-3; T. edn., pp. 42-3. For the *maulidaṇḍa* see also the K.J.K., p. 60.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

them aside, since our interest here is in the technique of constructing a human body in general. We must, however, take special note of the increase in the number of *upaśūlas*, as these are concerned with the technique in general. In the chapter devoted to the armature, we shall, therefore, discuss these details as well as those which should be noted and have not yet been dealt with.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

Chapter IX

CERTAIN PROBLEMS CONFINED TO THE SULAS OF THE ARMATURE OF THE FEMALE FIGURE

We have already observed in chapter VII that many of the *Āgama* texts prescribe *uttamadaśatāla* and *madhyamadaśatāla* measurements for the male and female figures respectively. In the last chapter we have discussed the measurements of the *śūlas* for an image constructed according to the *uttamadaśatāla* system and we are therefore acquainted with the problems of the *śūlas* for the armature of a male figure. We may now turn to the *śūlas* for the female figure.

In fact there are only a few differences between the anatomy of the female figure and that of the male. The texts which prescribe the *madhyamadaśatāla* system of measurements for female figures carefully include in that scale or system all the peculiarities which in ancient days were observed in the female figure. We need not repeat all of them here and for our present purpose it will suffice to note only those special points of the female figure which directly affect the measurements of the *śūlas*. The fact that these peculiarities are few in number probably explains why the texts mention only a few items.[1] These are as follows:

1. One third[2] part of the *madhyodara* would be the width of the *vaṃśadaṇḍa* at its bottom, and its end measures one eighth less than its bottom. This statement perhaps needs some clarification.

a.y

As has been stated in chapter VII the *madhyodara* of the female figure measures 11 *aṅgulas*, so the width of the *vaṃśadaṇḍa* at its bottom is .. .. 3·5

2. And the same, at its end, roughly .. .. .. 3·1

This *śūla* should be round from beginning to end.[3]

[1] Generally speaking, the account given in the V.A.K. is similar to that of the K.Ś., the difference worth noting will be pointed out. For the same subject see also S.A.A., p. 66 and K.J.K., pp. 60–1.

[2] In the male figure the *vaṃśadaṇḍa* is one fourth of the *madhyodara* and in the female figure it is one third. In spite of this the latter measures less, because the *madhyodara* in the female figure is only 11 *aṅgulas* while it is 16 in the male figure. This means the whole peculiarity lies in the fact that the loin of the female figure is much narrower than that of the male figure. This method of determining the width of the *vaṃśadaṇḍa* in terms of the *madhyodara* is quite scientific, for two reasons: firstly, because the *vaṃśadaṇḍa*, along with the *pārśvadaṇḍas*, occupies less space and, secondly, because this removes the complication of joining the *pārśvadaṇḍas* at their upper part with the *vakṣodaṇḍa*, which is also shorter in the female figure than in the male figure, as we shall see further on.

The V.A.K. states that the width of the *vaṃśadaṇḍa* should be 4 *aṅgulas*. For details of the *śūlas* of the female figure see M. edn., pp. 81–2; T. edn., p. 42, though in the latter almost all the statements are missing.

[3] The MS. of the K.Ś., like the Ś.R. (p. 86, verse 31b), reads "*aṣṭāṃśahīnamagrasya viśālaṃ tatsuvṛttakam*". Normally

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

a.y

3. In length the *vakṣodaṇḍa* is equal to the width of the chest minus half the width of the *bāhu*.[4] In other words it is 24.0

4. The depth of the *vakṣodaṇḍa* is[5] 6.0

5. Its width is 3.0

This is one of the characteristics of the female figure. While the difference between the total heights of the male and female figures is only 4 *aṅgulas*, the chest in the female figure measuring 31 *aṅgulas*, is narrower than the male chest, which measures 41 *aṅgulas*. Accordingly the *vakṣodaṇḍa* in the female figure is 8 *aṅgulas* smaller than that of the male figure.

6. The length of the *kaṭidaṇḍa* is one fifth less than the total width of the *kaṭi* in its finished state. We have seen in chapter VII that the *kaṭi* in its finished state measures 24 *aṅgulas* from one end to the other. If so, the length of the *kaṭidaṇḍa*[6] is 19.1½

7. The depth[7] of the *kaṭidaṇḍa* is 8.0

the word *tat* should here refer only to the end of this *śūla*, for it is the preceding item. But it seems to refer to the entire *vaṃśadaṇḍa*, otherwise there would not be any sense in specifying the shape of its end only, leaving aside the other portion or portions of it. If it should be made in three shapes, as in the male figure, the text could have indicated this clearly. We have therefore taken the word *tat* to refer to the entire *vaṃśadaṇḍa*.

Although, according to the K.Ś. the *vaṃśadaṇḍa* in female figures is always round, yet this statement cannot be compared with that in the V.A.K. According to the K.Ṣ. the round shape could be made in male figure too, whereas the V.A.K. declares that this *śūla* should be made in three shapes only in the case of Viṣṇu images, while in all other cases it should be square only. It is not, however, equally understandable why the K.Ś. prescribes a round shape only in the case of female figures.

Perhaps it is interesting to note here that the V.A.K. not only states that the *vaṃśadaṇḍa* in female figures should be square, but also says that it must be slightly curved (*devyoś śūlaṃ caturaśraṃ kiñcidvakram*, M. edn., p. 81; T. edn., p. 42). The reason for this statement is not clear. It was probably felt that it would not be right, if the female figure is made quite erect like that of the male, for in that case the expression would be masculine rather than one of grace and modesty, qualities which are considered highly desirable in the case of females.

[4] Half the width of the *bāhu* should be interpreted as applicable to both sides, otherwise the *bāhuśūlas* would not run exactly down the middle of the *bāhus* which is most desirable, as mentioned in the previous chapter. This means that we have to deduct the whole width of a *bāhu* from the total width of the chest in order to get the length of the *vakṣodaṇḍa*. In Chapter VII we have seen that the total width of the chest, including the two *bāhumūlas*, from one end to the other along the horizontal line running across the *kakṣāmūlas*, is 31 *aṅgulas* and the width of each *bāhumūla* 7 *aṅgulas*. So we must deduct 7 from 31. The V.A.K. explicitly states (M. edn., p. 82; in T. edn. these statements are missing, p. 42) that its length is 25 *aṅgulas*, which supports our conclusion.

[5] Here the text (printed version, p. 245, verse 33b; Ś.R., p. 86, verse 32b, as well as the MS.) reads "*tasyārdhaṃ vistṛtaṃ bhavet/tadardhaṃ bahalaṃ khyātam*", according to which the depth of the *vakṣodaṇḍa* measures 12 *aṅgulas*. But this is impossibly large and so this reading cannot be accepted. Instead of *tasyārdhaṃ*, the original reading might have been *tatpādam* which is supported by the V.A.K., where we find *vakṣodaṇḍāyāmaṃ pañcaviṃśatyaṅgulaṃ ṣaḍaṅgulavistāraṃ tadardhabāhulyam* (M. edn., p. 82; in T. edn. these statements are missing, see p. 42).

[6] The V.A.K. (ibid.) prescribes it as 19 *aṅgulas* and six and a half *yavas*.

[7] The actual wording here is: "*śeṣaṃ prāgiva kartavyam*". The question arises whether this *prāk* refers to the method

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

		a.y
8.	Its width is	4.0

This is another example of the characteristics of the female figure. The length of the *kaṭidaṇḍa* in the male figure also measures four fifth of the total *kaṭi*, as is the case with the *kaṭidaṇḍa* in the female figure, yet the latter is longer, because the *kaṭi* in the female figure, measuring 24 *aṅgulas*, is greater than that of the male figure, which measures only twenty and a half *aṅgulas*. Although the difference is only three and a half *aṅgulas*, yet the *kaṭi* in the female figure will look very much wider when it is seen in relation to the loin and chest, which are narrower than those of the male figure.

These are the three points[8] characterising the armature of the female figure. However, this by no means implies that these are the only peculiarities of the female figure and in fact the whole system of *madhyamadaśatāla* measurement is meant to bring out such peculiarities fully. Only three points are discussed above because they definitely have a bearing on determining the measurements of the *śūlas* or the armature, while the rest do not have this implication to the same degree. Therefore in the other matters, as the text puts[9] it, one has to follow the lines specified in the case of the male figure. This statement perhaps needs some clarification. It does not imply that the measurements of the other *śūlas* should always be made as in the case of the *śūlas* of the male figure, because, if this were the case, it would have been pointless to describe the measurements of *madhyamadaśatāla* at length, next to those of *uttamadaśatāla*. What this statement does indicate, then, is that the measurements of the *śūlas* of the male figure could be followed as far as possible, and in the remaining cases only the principles as implied in the *śūlas* of the male figure should be adopted to the *śūlas* for the armature of female figure. One should, therefore, be careful in determining the measurements, especially the lengths of the *śūlas* of the female figure, in accordance with the *madhyamadaśatāla* proportions.

Having noted all the details of the *śūlas* that are meant for the armature of the male and female figures we shall now proceed to discuss the problems of the construction of the armature in the next chapter.

by which the measurements of the *vakṣodaṇḍa* of the female figure are determined, or to the very measurements of the *vakṣodaṇḍa* of the female figure (for this is the preceding item), or else to the *śūlas* of the male figure in general. If it refers to the first two possibilities then the depth of the *kaṭidaṇḍa* should be either 4 *aṅgulas* and 6 *yavas* or 6 *aṅgulas*. But both these measurements seem small. So we have taken it to refer to the *śūlas* of the male figure which is supported by the explicit mention of the V.A.K. that one should make the *kaṭidaṇḍa* of the female figure 7 *aṅgulas*, and 3 *aṅgulas* and 4 *yavas* in depth and width respectively.

[8] The K.Ś. specifies only these, while, on the other hand, the V.A.K. mentions the measurements of the *ūru-* and *jaṅghā-śūlas* as well. But these need not be repeated unless they have some bearing on the armature. Owing to the corrupt readings it is now difficult to determine whether they have any special bearing or not.

[9] As quoted in note 7 of this chapter.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

Chapter X

THE SULASTHAPANAVIDHI OR METHOD OF ASSEMBLAGE AND INSTALLATION OF THE ARMATURE

The subject of the preparation of the different materials of a clay image was discussed in the previous pages, and we now turn to the second aspect, viz. the method of employing these materials for the construction of the clay image. In this process the armature is the first item to be made and, therefore, the first to be dealt with.

As the *śūlas* are, after all, nothing but the component parts of the armature, one may naturally expect to find in the ancient literature a special word for the assemblage of these *śūlas* (i.e. the armature). But none of the texts mentions any name. On the contrary, they indicate the armature merely by the same word *śūla*,[1] as is proved by the usage *śūla-sthāpanavidhi*,[2] meaning the method of installing the *śūlas*. This really seems strange, but in fact we have not come across any text furnishing such a name.

It is difficult to believe that the ancient *sthapatis* (sculptors and modellers), who strove with all humility to reach a higher stage of perfection in both practice and theory (*lakṣya* and *lakṣaṇa*), did not feel the necessity of creating a word for the assemblage of *śūlas*. The act of giving a name to the armature need not, in fact, have been deliberate. On the contrary, it should have been spontaneous or automatic. From certain expressions[3] prevalent

[1] This is the case not only with the texts which we use here, but also with others such as the *Suprabhedāgama* and the *Hayaśīrṣapāñcarātra*, as appears from the discussions of Gopinatha Rao (E.H.I., Vol. I, p. 50) and J. N. Banerjea (D.H.I., p. 210).

[2] When the texts devote a special chapter to this subject, it is also called by this same name. If not, it is at least the name of the subject.

[3] A certain expression is prevalent in Hindī, viz. "*mazbūt kāṭhī kā vyakti*", which means 'a person having a body of strong structure'. (We are grateful to our friend, Mr. Hariśaṅkara Śarmā of Hindī-Bhavana, Śāntiniketan, for drawing our attention to this expression.) The word *kāṭhī* in this expression refers to the structure. Strictly speaking, it means only wood or a wooden stick. Now, how could the word *kāṭhī* come to mean structure? Those knowing the technique adopted by the modellers for the building up of clay images will be easily tempted to say that behind this expression was the practice of making the frame or armature of an image out of wood, i.e. that, on the basis of such a practice, people might have started to call the armature *kāṭh* or *kāṭhī* (< *kāṣṭha* Skr.), out of which it is made, and later to apply this to the structure of a living body. In other words, people might have begun to use the word *kāṭhī* with special reference to the structure that was used to build up a clay image, and then with reference to the structure of a living body. Thus, at least two changes of meaning might have taken place before it began to have the present meaning.

Similarly, in Beṅgālī we find the word *kāṭhāmo* or *kāṭhām*. We have noticed people using it in three senses: (1) That of a basic structure, not only of an image but more in general. Obviously it came into vogue because of a usage of specific nature. Thus, it is of less interest to us than the other two. (2) As we shall see in chapter XIV, in the modern practice of clay modelling in Bengal an armature is *generally* built up of bamboo and

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

in modern Indian languages it seems that there was a special word in Sanskrit also to denote the assemblage of *śūlas*, i.e. the armature. Nevertheless it is difficult to infer what this might have been.

In the circumstances we are inclined to coin a word which may be used until the ancient term will be discovered. *Asthipañjara*[1] is a widely known Sanskrit word which has the exact sense of skeleton. We do not know precisely how long this word has been in use, but there is no doubt of its long history. On the analogy of this we suggest the word "*śūlapañjara*" for use in the sense of armature. It may be pointed out here that this suggestion will not betray the spirit of the ancient artists but will, on the contrary, be consistent with it, because they imagined the *śūlas* as bones and also described them metaphorically as such. In the word "*śūlapañjara*" there is no reference to the material of which it should be constructed. In modern times artists trained in the art schools or those who follow similar methods construct the armature of iron or similar materials, so they will feel no hesitation to use the word "*śūlapañjara*", as there is no reference in it to any material. Hence hereafter, whenever the armature is to be mentioned, we shall use the word "*śūlapañjara*" without inverted commas.

covered with straw to form a core, see Pl. XVII, Figs. 40 and 41. This core is called *kāṭhāmo*. (3) While making an image of the goddess Durgā along with the attendant figures, a frame is constructed mainly of wood. This frame, as can be seen from Pl. XVI, Figs. 36-38, stands behind the group and serves as a support at the back. As such, it is not the armature, yet people sometimes refer to it also as *kāṭhāmo*. This is the third sense which obviously came into practice on account of the second usage mentioned above. This word *kāṭhāmo* in its second sense is, therefore, of great interest to us.

In his *Baṅgīyaśabdakośa* (p. 831) Haricaraṇa Bandopādhyāya shows its derivation in this way: "*kāṭhām* or *kāṭhāmo* < *kāṭh-kām* < *kāṣṭha-karmma*"; and he gives alternative suggestions thus: "*kāṭhām* or *kāṭhāmo* < *kāṣṭha-maya*", or else "*kāṭhām* or *kāṭhāmo* < *kāṣṭhamūla* (?)". In his *Bāṅglā-Bhāṣār-Abhidhān* Jñānendramohan Dās gives only one derivation, which is identical with the first mentioned above. J. N. Banerjea (D.H.I., p. 210, note 2) also thinks that it is derived either from *kāṭha* or *kāṣṭha*. The very attempt to give several possibilities of derivation clearly indicates that the matter has not yet been settled.

But the ancient texts on which our present work is based, support the conjecture that the word *kāṭhāmo* is derived from the word *kāṣṭha*, which is compounded with some other word (or suffix). This derivation is unquestionable and the ambiguity is confined to the word with which *kāṣṭha* is compounded. From our partial understanding of the derivation we might expect that the armature constructed in Bengal is made of wood. But, as we shall see, the armatures are constructed of bamboo, and it seems that this has been the practice for a long time. If they are now even made of wood, this would be an extremely rare exception, which, as a matter of fact, we have never come across. However, the derivation of the word *kāṭhām* or *kāṭhāmo* presupposes that at one time or another there existed a practice of constructing the armature entirely of wood. Hence, we can take it for granted that the word *kāṭhāmo* came into existence because of the practice of constructing the armature of wood only and that for some reason bamboo later on took the place of wood, although the word *kāṭhāmo* remained to denote the armature as such without reference to the material of which it was constructed. In other words, at one time the word *kāṭhāmo* was purely *yaugika* and later came to be, and still is, purely *rūḍha*. Nevertheless, this point is highly valuable for our investigation of the ancient technique of clay modelling. We do not know whether any expressions as these are current in other languages as well.

[1] The word *asthiyantra* is also occasionally met with in the ancient literature [M.S.V. (Gilgit MSS.), Vol. III, Pt. 1, p. 59], which is in all likelihood synonymous with the *asthipañjara*.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

PREREQUISITES OF ALL THE POSTURES

There are certain aspects which should be completed before the assemblage of the *śūlapañjara* proper is started irrespective of the question whether a figure is built in standing (*sthānaka*) or sitting (*āsana*) or in reclining (*śayana*) posture. One of them is the proper checking of the *śūlas*. In this regard the texts prescribe to prepare a platform (*vedi*) temporarily near the spot of the installation by spreading out unpounded rice (*dhānya*) in sufficient dimensions to accommodate all the *śūlas* and cover it with cloths. On this 'bed' one should place the *śūlas* in proper positions, i. e. according to the limbs of the body, so that, as the texts put it, they should not get mixed up (*asaṅkula*) and create confusion. The arrangement of the *śūlas* suggested in this way by the texts corresponds that to be found in our Pl. I, with one or two minor differences, if at all they exist. As this platform is meant for laying the *śūlas*, the texts call it *śayyāvedi*, i.e. the platform serving as bed.[5] Alternatively one may also provisionally assemble the five *śūlas* of the trunk, viz. *vakṣas-kaṭi-* and *vaṃśa- daṇḍas* and two *pārśvadaṇḍas* and place the frame thus formed on the *śayyāvedi*, while keeping the rest of the *śūlas* at the proper places near this frame.

Another item that should be prepared before fixing the *śūlapañjara*, is the *upaśūla* or "support".[6] In the appropriate position a hole should be made in the wall behind the image in which the *upaśūla* should be firmly fixed. To let only a small portion of the *upaśūla* into the wall would not suffice. Indeed, one has to take care that it starts from the middle of the wall. so that it can hold the weight of the image properly. Besides the good shape of the socket the position and level of the *ādhāraśūla* is also of the utmost importance. Otherwise some undesirable results may follow. On account of inadequate fixation and of bad shape of the socket of the *upaśūla* the armature showed some defect in our experiment, viz. the hip was slightly pushed to the left, see Pl. V, Fig. 11, Pl. II and some of others too. We thought we would be able to rectify this gradually, but at last we failed to do so. It remains to be added that in the case of reclining posture, as we shall see, no *upaśūla* need be let into the wall behind, but instead several small *upaśūlas* which are required in this case, must be fixed in the altar.

As a first condition for the installation of the *śūlapañjara* a platform (*pīṭha*) must be

[5] V.A.K., M. edn., pp. 83-84; T. edn., p. 43. Although owing to the clumsy and corrupt readings it is difficult to find this matter in other texts in such a clear way, the same trend could also be noticed in them, see S.A.A., pp. 67-68; K.J.K., p. 62 and K.Ś., p. 247.

[6] Whether the *upaśūla* should be firmly fixed or provisionally fixed in the back wall before attaching the armature to it, is really a technical question. If it is fixed beforehand, it may sometimes create difficulty in maintaining the equilibrium of the armature, according to the posture. Of course it is possible to overcome this when everything is perfectly calculated. There is no doubt that the K.Ś. instructs its firm attachment before fixing the armature (see p. 245, verse 40, for the same statement, see also Ś.R., p. 86, verses 38b-39a). Other texts too seem to show the same tendency, see V.A.K. (M. edn., p. 85; T. edn., p. 43; but in the latter the readings are more corrupt) and S.A.A. (p. 81, verses 52-4).

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

built with either stone or brick. In either case it should contain a "base-stone" (*ādhāra-śilā*) in the centre of the top surface. On this "base-stone" the image is actually built.[7] One may explain this platform together with its "base-stone" as an altar or simply as a pedestal. The point at which the platform should be raised in the entire space of the *sanctum sanctorum* is decided on the basis of the nature of the image. There are many rules with regard to where a certain type or kind of image should be installed in a given place,[8] but we need not enter into these details, as they do not come within the scope of the technique of the clay figure. It is sufficient to note that one should prepare a pedestal before starting to build a clay image.

PROBLEMS RELATED TO THE ARMATURE OF THE STANDING FIGURE

If the image is to be made in a standing posture, two holes should be made on the pedestal for the purpose of fixing the *jaṅghāśūlas* and each of these should measure six *aṅgulas* in depth and three *aṅgulas* in diameter.[9] In chapter VIII, item 25 we have already seen that an additional part of the six *aṅgulas* should be kept for this purpose at the lower end of the *jaṅghāśūla*, see Pl. II, Fig. 2, below the board under the feet, which arrangement is specially adopted here to show the feature in question. This additional portion measures approximately two *aṅgulas* in diameter. So the depth of these holes corresponds to the additional parts of the *jaṅghāśūlas*, but a space of roughly one *aṅgula* is left in the diameter which is meant for the binding material.

The texts are silent on the question of the distance at which these holes should be made.

[7] K.Ś., pp. 248-49, verses 41-44 and Ś.R., p. 87, verse 2.

[8] See V.A.K., M. edn., pp. 72-3; T. edn., pp. 36-37, where a clear description of the method of dividing the entire area of the *sanctum sanctorum* into zones is found. Also see p. 84 and p. 43 of the respective edns., where the text instructs to create the altar at the proper place. For a brief mention of the same, also see S.A.A., p. 75, verse 48 *et seq.* A different system of dividing the space of the *sanctum sanctorum* into zones is found in the K.Ś., p. 248, verse 38 *et seq.*

[9] Instead of *ratnāṅgulam* and *kartavyaṃ saguṇāṅgulam* (K.Ś., p. 249, verse 44), the MS reads *ratnagartam* and *gartavyā-saṃ guṇāṅgulam*. The latter readings are correct and correspond in meaning to those found in the Ś.R., p. 87, verse 3.

Irrespective of the material of which the *Dhruvabera* or main deity is made, it is a general practice in India, especially according to the Hindu manner of installing it in the *sanctum sanctorum*, to deposit some precious stones, gold, silver, etc. underneath the part of the image which is placed in the hole made in the pedestal. It is even stated that temples were looted and destroyed in the past by iconoclasts on account of this. The point here is that the placing of precious stones is indicated with a special term, *ratnanyāsa*. In keeping with this tradition our texts also prescribe this act. That is why the K.Ś. calls these holes in the pedestal *ratnagartas*. On account of the *ratnanyāsa* the 6 *aṅgulas*' deep holes, as described in the K.Ś., are insufficient. But to what extent they should be made deeper cannot be said, because that depends on how many precious stones are deposited in them. Perhaps this is why the text does not specify the measurement. The specified six *aṅgulas* of depth correspond to that part of the *jaṅghāśūla* which is kept for the purpose of installing the *śūlapañjara*.

Although the *ratnanyāsa* is a well-known subject, yet J. N. Banerjea mistakenly explains it as "*ratnavedi* or altar on which the image is placed" (D.H.I., p. 210).

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

In fact this matter depends upon the attitude or pose in which the image is to be shown, because the distance of the legs varies accordingly and so this measurement cannot be specified. This probably explains the silence of the texts regarding this matter. Perhaps all that can be said in this connection is that the *sthapati* or modeller should see to it that the *jaṅghāśūla* runs exactly through the middle part of the heel. In spite of the silence of the texts we may, to give a general idea, try to specify this measurement on the basis of the *samasthāna*, the natural and frontal posture on the basis of which many technical details, including our present technique, are generally explained in the Indian theory of art. The distance between the inner edges of these two holes should be five and half *aṅgulas* and that between the interior edges of the *śūlas* should be six and half *aṅgulas*.[10]

When the pedestal along with holes and the *upaśūla* are prepared, one can fix the assembled *śūlapañjara*, but as far as the assemblage of the *śūlas* is concerned only certain *śūlas* will be assembled at first and then, as the work progresses, different *śūlas* will be joined in various stages in the following order.

First, one should take the five major *śūlas*, the *vaṃśadaṇḍa*, *kaṭidaṇḍa*, *vakṣodaṇḍa* and the two *pārśvadaṇḍas*, and fix these firmly in their proper places.[11] As a result we get a frame with the upper and lower arms extended and with oblique sides.

The measurements that should be followed in spacing the *śūlas* of this basic frame are specified in the following way.[12] When the *vakṣodaṇḍa* is fixed to the *vaṃśadaṇḍa* the upper edge of the former should lie two *aṅgulas* below the *hikkā*, i.e. below the pit of the neck (see *vaṃśadaṇḍa* towards the upper end of its octagonal shape or a little below its round shape, where this point is marked with a small hole as well as with a white line running across in Pl. I). Similarly, when the *kaṭidaṇḍa* is fixed to the *vaṃśadaṇḍa*, the upper edge of the former should lie five *aṅgulas* below the *nābhi*, i.e. the point of the navel (see the same as above, but towards the end of the square shape or somewhat below the octagonal shape of the *vaṃśadaṇḍa*, where too this point is similarly marked). The *śikhās* lying at both ends of each *pārśvadaṇḍa* should be fixed into the sockets made in the *kaṭi-* and

[10] The width of the heel at the bottom is said to measure four and half *aṅgulas* (see Ś.R., p. 36), out of which two *aṅgulas* are occupied by the *śūla*. This leaves one and a quarter *aṅgulas* on either side of the *śūla*. In general the texts, for example the V.A.K. (M. edn., p. 160; T. edn., p. 82), mention four *aṅgulas* for the distance between the interior edges of the heels which means that the distance between the *śūlas* would be $(1\frac{1}{4}+4+1\frac{1}{4}=)6\frac{1}{2}$ *aṅgulas*.

[11] Of course the K.Ś. does not explicitly mention that these five *śūlas* should be assembled first. Yet we come to this conclusion from the entire description of the different *śūlas* in general and especially from one particular statement (p. 245, verses 40b-41a; for the same, see also Ś.R., p. 86, verse 39). The other texts explicitly mention this matter: see S.A.A., p. 70, verses 35-36 and V.A.K., M. edn., p. 85; T. edn., p. 43 (in the latter edn. the readings are more corrupt). A passage in the last-mentioned text (M. edn., p. 85, para. 4) — if at all reliable, which we very much doubt — seems to suggest an alternative method of assembling the *śūlas*.

[12] In the K.Ś. (in the printed version, p. 243, verses 6b-7a and 8b-9a, as well as in the MS) the readings are corrupt, but they are clear in the Ś.R. (pp. 83-4, verses 8b-9a and 10b-11a), the S.A.A. (p. 65, verses 15-17) also specifies this matter. In the other two works this subject is not found.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

vakṣo-daṇḍas,[13] see Pl. II, Figs. 2-3 and Pl. VII, Fig. 15, though, as pointed out at the end of the item 38 of chapter VIII, the upper ends are mistakenly fixed at a greater distance.

In whatever posture an image may be made, these *śūlas* should be assembled first, so that a frame is constructed. Hence it may be called the basic frame.

When this basic frame is ready, the next step is to join the *ūru-* and *jaṅghā-śūlas* properly. Of course, the question of joining them does not arise when only one *śūla* is made for the entire leg, as alternatively prescribed. When the *śūlas* of the legs are thus prepared, they should be attached to the *śikhās* made at both sides of the *kaṭidaṇḍa*.

Now one should hold the *kaṭidaṇḍa* with one hand and the *vakṣodaṇḍa* with the other[14] and, raising the entire thing, the lower ends of the *jaṅghāśūlas* should be placed into the holes of the pedestal after attaching the *talaśūlas* to them, see Pl. II, Fig. 2, which figure is provisionally assembled to show this peculiarity. Simultaneously one should also place that portion of the *vaṃśadaṇḍa* which is immediately below the *vakṣodaṇḍa* into the socket or mortice of the *upaśūla*, which has been fixed beforehand into the wall behind, see Pl. II, and Pl. IV, Fig. 6 or even Pl. VII, Fig. 15.

Next, one should fix the *jaṅghāśūlas* firmly by pouring *aṣṭabandha* or stucco (*sudhā*) into the empty portions of the holes[15] in the pedestal, see Pl. II, Fig. 3. Then a nail (*kīla*) made of either iron or wood, should be gently pushed into the holes already made in the *śikhās* of the *upaśūla* in front of the *vaṃśadaṇḍa*,[16] see Pl. II, Fig. 2 or even Pl. VII, Fig. 15, where this is provisionally pushed and see Pl. II, Fig. 3 where it is finally pushed, though its ends are still to be cut out; observe the Pl. IV, Fig. 5 where these ends are cut out. These two actions—pouring *aṣṭabandha* or stucco into the holes of the pedestal and pushing a nail into the holes of the *śikhās* of the *upaśūla*—make the *śūlapañjara* stable. Then the rest of the *śūlas*, as for example, those of the arms, are to be attached to the *śikhās* made at both sides of the *vakṣodaṇḍa*. Previous to this, the *śūlas* of the arms and forearms should be joined in the appropriate position, see Pl. II, Fig. 2.

After thus assembling all the wooden *śūlas*, the copper plates for the hands and feet should be attached in their proper positions. At the beginning the plates should be somewhat longer than the measurements of the hands and feet and these additional parts should be made round, i.e. tubes (*nāla*) so that they can be attached to the *prakoṣṭha-* and *jaṅghā-śūlas*. In this way the beginnings of the copper plates can be attached behind the

[13] In items 35-38, including the notes, of chapter VIII we have discussed all the details connected with these two *śūlas* or *daṇḍas*.

[14] K.Ś., p. 245, verse 40; for the same, see Ś.R., p. 86, verse 39.

[15] K.Ś., p. 249, verse 47; Ś.R., p. 87, verse 6.

[16] K.Ś., p. 245, verse 42; Ś.R., p. 86, verses 40b-41a.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

wrist-joints and above the ankles.[17] Nails should never be used to fix them[18] (see Pl. II, Fig. 3), but, speaking conjecturally, they should be tightened perhaps with copper wire or thread.

As has been explained in chapter VIII, item 39 copper plate is used not only for the hands and feet but also for the ears. However, at this stage it would be too early to attach the plates for the ears and this is done later while applying the clay.[19]

As the assembly of the different *śūlas* is now complete, all the joints of the *śūlas* should be tightened. For this purpose also, one should employ copper sheets.[20] These sheets may measure either five, six, seven or eight *yavas* in width, while their thickness is always one sixth of their width. Their length is determined according to need.[21] Every joint is strongly tightened by wrapping the copper sheets of the desired measurements around it and, in their turn, these sheets should be tightened with copper thread, see Pl. II, Fig. 3.

[17] Although, as has been noted, the K.Ś. prescribes the use of copper plates for the hands and feet, it does not specify how these should be attached. In this respect the K.J.K. is also of little help (p. 61) and in the V.A.K. this topic is not found at all. The only text that clarifies it is the S.A.A. (p. 81, verse 56), on the basis of which we have explained the matter.

[18] Again, this prohibition of using nails is found only in K.J.K. (*na kīlabandhaiḥ*, p. 61; it seems that some preceding as well as succeeding statements are missing here).

While making the experiment we faced certain difficulty in fixing the copper plates for the feet and hands. We found it difficult to keep the ends of the copper plates of the feet to rest on the wooden *śūlas* after tying them with the copper wire. Hence ultimately we had to use nails at the front parts of the plates, which ran into the pedestal (in this case a wooden board). This problem arose, because we employed a very thin plate as against the prescription (see the next Paras. in the text). We believe that this might not have arisen, if the plates of the prescribed thickness or of still greater thickness were used. In the absence of any statement regarding the material that either tightens or fixes these plates and in the presence of the prohibition, in one text, of the use of nails, we inferred the copper wire or thread as substitute. Though it worked well with other joints, it did not prove so satisfactory in the case of the plates on the feet. Hence we employed nails near the ankles too. But the wire appeared to be a very insecure device in the case of the plates of the hands. This would prove more so, when the weight of the clay falls on them. Here too we had to use nails. However, the prohibition of the use of nails seems to have some meaning, because to drive them at this stage by hammering, etc. may disturb the positions or the equilibrium of the *śūlapañjara*. Nails cannot certainly be employed at some joints like the one between the *ūruśūla* and the *śikhā* of the *kaṭidaṇḍa* and between the *bāhuśūla* and the *śikhā* of the *vakṣodaṇḍa*. Or iron nails might have been meant by this prohibition. In that case either wooden or copper nails may be utilized, but even in such case the necessary holes should be made in proper places prior to the assemblage of the *śūlas* so that one may be in a position to avoid heavy hammering and thus not to disturb the positions of different parts of the armature. In any case the question should remain open until some definite textual evidence comes to light.

[19] None of the texts clarifies how and when the copper plates for the ears should be fixed, in other words, there is no textual evidence for what we have explained in this paragraph. We have explained it only on the basis of common sense.

[20] K.Ś., p. 250, verse 1; Ś.R., p. 87, verse 8.

[21] The specification of the measurements of these sheets is found only in the V.A.K., M. edn., p. 85; T. edn., p. 44, but in the latter some readings are missing. The phrase *tāvadāyataiḥ*, which specifies the length, should be interpreted in the way we have done, as no other meaning does fit in the context.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

When the joints are thus made firm, the assembly and installation of the *śūlapañjara* is completed; in other words, the use of copper sheets for fixing the joints[22] is the last item of the construction of the armature.

In the preceding pages we have discussed the procedure and the principles of construction and installation of the armature in the case of a standing (*sthānaka*) figure. With a few exceptions the same procedure and principles are valid for sitting (*āsana*) and reclining (*śayana*) postures. Hence it will suffice to concentrate now on the exceptions.

PROBLEMS RELATED TO THE ARMATURE OF THE SEATED FIGURE

In a sitting posture too the *upaśūla* should lie immediately below the *vaṃśadaṇḍa*. It should, therefore, be fixed into an appropriate place of the wall before the installation of the *vaṃśadaṇḍa* takes place.

In a sitting posture the weight of the body is not carried by the legs but by the vertebral column. Consequently the *vaṃśadaṇḍa* is installed in this posture, that is to say, what we have called the basic frame should be made first of all and the *vaṃśadaṇḍa* lying in the central part of that frame, should then be installed. Hence only one hole should be made in the pedestal in order to fix the part which is added to the lower end of the *vaṃśadaṇḍa*. This hole measures four *aṅgulas* in depth, and in width, presumably five or a little more than five *aṅgulas*[23] on each side. We have noted already in chapter VIII, item 3 that the additional part that should be kept at the lower end of the *vaṃśadaṇḍa* is eight *aṅgulas*. Of this the lower half (4 *aṅgulas*) should be placed in the hole of the pedestal (see Pl. VII, Fig. 16 where the additional part of eight *aṅgulas* at the lower end is divided into two equal digits and marked with the incised lines running across and also

[22] The preparation of the copper plates would demand some thought and skill even in the case of the knees and elbows, when these are in acute bend, though which at first sight appear simple. In the joints of arms and thighs (i.e. the one between the *bāhuśūla* and the *śikhā* of the *vakṣodaṇḍa* and the other between the *ūruśūla* and the *śikhā* of the *kaṭidaṇḍa* respectively) in all but perfectly perpendicular position, this matter is more complicated. There is, therefore, no single way of preparing them and one has to proceed according to the situation. But the copper thread can be used more easily.

[23] In the printed version of the K.Ś. (see p. 249, after verse 46a) a few hemistichs are missing in this context. Some of these, at least, are found in the MS. One hemistich concerned with this matter runs as follows: "*āsane tu caturmātraṃ vaṃśadaṇḍe nidhāya ca*". After this it is perhaps stated that a hole of corresponding measurement should be made, but this is missing also in the MS. It is found in the Ś.R. (p. 87, verse 4.), though here, too, a sentence is missing, which might have described it as being related to the sitting posture. But this matter is quite clear from the statement concerning the *śūlalakṣaṇa* (see K.Ś., p. 245, verses 35b-36a; here instead of the reading *kartaśupośanam*, the MS reads *śeṣaṃ garte tu veśanam*; see also Ś.R., p. 86, verses 34b-35a).

No statement is found in the texts about the width of the hole in which the above-mentioned piece of the *Vaṃśadaṇḍa* is fixed, but we may suppose that it originally existed and is now missing for some reason. Nevertheless we have specified this measurement on the analogy of that prescribed for the holes meant for the *jaṅghāśūlas* of standing posture.

References for the use of *aṣṭabandha* or stucco (*sudhā*) to fix this *śūla*, are as given in note 15 of this Ch.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

see the Fig. 15 where one of these digits of four *aṅgulas* is found below the wooden board, which device is specially adopted here to show the part of the *vaṃśadaṇḍa* lying in the hole) and at the same time the upper part of the *vaṃśadaṇḍa* should be attached to the socket or mortice of the *upaśūla*. As in the case of a standing figure this should be fixed in two ways — by pouring *aṣṭabandha* or stucco into the empty portion of the hole in the pedestal and by driving a nail into the holes of the *śikhās* of the *upaśūla* in front of the *vaṃśadaṇḍa*. Then the *śūlas* of the legs and arms should be joined and fixed as before.

After the installation of the frame by placing a four *aṅgulas* long piece of the *vaṃśadaṇḍa* into the hole of the pedestal, the rest of the extra part at the lower end of the *vaṃśadaṇḍa*, which also measures four *aṅgulas*, should be visible. This additional portion gives scope for modelling the height of the buttocks,[24] see Pl. VII, Figs. 15 (and 16). This may be explained in detail.

In the foregoing pages we have seen that the *vaṃśadaṇḍa* measures sixty-two *aṅgulas* from the *liṅgamūla* to the top of the head. But the lower regions of the buttocks, on which the entire weight of the torso rests in a sitting posture, do not lie on the level of the *liṅgamūla*, and, on the contrary, end below it. This point was clear to the Indian anatomists as can be noticed in the descriptions of some of the texts, as for example, the *Mānasollāsa* and the *Samarāṅgaṇasūtradhāra* in which the adult form is treated from nine different angles. The distance between the *liṅgamūla* and the lower ends of the buttocks is not visible in a standing posture because it follows the course of the legs, or the height of the legs which remain perpendicular carrying the whole weight of the body. In a sitting posture, on the other hand, this distance would be fully projected and become part of the height of the torso, i.e. increase the length of the trunk. If the *vaṃśadaṇḍa* is so fixed that the *liṅgamūla* touches the pedestal, this distance (i.e. the distance between the *liṅgamūla* and the lower ends of buttocks) cannot be obtained. Therefore the additional portion of four *aṅgulas* should remain visible at the end of the *vaṃśadaṇḍa*. In this case there will be scope for modelling the buttocks in their proper shape and also for creating the full depth of the thighs, otherwise both of these cannot be modelled. This is all that should be noted about the assembly and erection of the armature of an image in a sitting posture.

[24] Ś.R., p. 86, verse 35; K.Ś., p. 245, verse 36. Although the usual meaning of the word *pṛṣṭha* is back, yet in this context it can mean nothing but buttocks. This was clearly stated in the K.Ś. elsewhere in a similar context: "*sphikpiṇḍamānametaddhi āsanordhve viśeṣataḥ*", p. 202, verses 2-3. For an another similar statement, see also p. 206, verse 3.

The V.A.K. uses *āsanodaya* and *āsanopari* (see M. edn., p. 80 and 85; these statements are missing in T. edn.), so it is evident that by these terms it means the same as does the K.Ś.

The K.J.K., p. 60 and the S.A.A., p. 65, verses 14-15, both use *pṛṣṭhaphalaka*. This word, too, like the simple *pṛṣṭha* used by the K.Ś. normally means the entire back but in this context indicates the height of the buttocks. Thus, it should be noted that all these words are used somewhat technically, like *śayanopari*, *śayanordhve*, etc. which will be explained further on.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

PROBLEMS RELATED TO THE ARMATURE OF THE RECLINING FIGURE

The sole peculiarity in installing the armature of a reclining figure lies in the number of *upaśūlas* required and the way in which they should be fixed. Apart from the problems of a reclining posture, there were several practices of using the *upaśūlas*, which have some technical significance. It is, therefore, better to discuss these before the problems of a reclining posture are explained. Moreover, this may also help us to understand the problems of the reclining posture.

So far our discussion about standing and sitting postures was based on the *Kāśyapaśilpa*. We have seen that with regard to the use of *upaśūlas*, this text does not differentiate between standing and sitting postures, that is, it prescribes only one *upaśūla* in the case of both postures. In addition, it may be pointed out that this text never mentions any question concerning reclining figures. The obvious explanation can be found in the fact that it belongs to the Śaiva sect with which it is not a usual practice to worship deities in a reclining posture. In contrast to this, the Vaiṣṇava sect adores Viṣṇu also in a reclining posture. So we shall see how the works of the Vaiṣṇava sect treat the *upaśūlas* in the case of images in reclining as well as in other postures.

The *Vimānārcanākalpa* prescribes[25] *upaśūlas* on the basis of different postures. In a sitting posture one *upaśūla* is enough; it lies below the *vakṣodaṇḍa* or else at the beginning of the *maulidaṇḍa* which is attached to the top of the *vaṃśadaṇḍa* in order to model the crown. In standing and reclining postures two *upaśūlas* are made. One lies below the *vakṣodaṇḍa* and the other below the *kaṭidaṇḍa*. But there is a difference: in the former posture both *upaśūlas* are fixed into the wall behind, while in the latter posture both are fixed into the pedestal.[26] In the case of a reclining posture the *upaśūlas* are fixed into the pedestal for the following reason. The total length of the figure lies horizontally and so these *upaśūlas* should hold the *vaṃśadaṇḍa* from below. No *upaśūla* need be fixed into the wall, because the vertical measurement in this posture is not so high that it needs support from the wall, see Pl. VII, Fig. 17.

According to the *Samūrtārcanādhikaraṇa*,[27] the *upaśūlas* should be made either of the wood of the tree Acacia Catechu (*khadira*) or of copper, i.e. the copper rods. At their end a hole

[25] For all the matters discussed in this paragraph, see M. edn., p. 85 and T. edn., pp. 43-4; but in the latter the readings are less correct.

[26] This is the meaning of the compound word *śayanordhva*. Literally this word may mean "above the bed", but what it should mean here is the space between the pedestal and the armature. This would be further clear from the discussion that follows in the next few pages.

[27] See p. 81, verses 52b-59. The phrase *tāmranālasamāyutam* in the first verse referred to here is not quite clear to us. Perhaps it suggests that the tubes made of copper plate, should be pushed into the holes of the *upaśūlas*, if they are made of wood, and be fixed to remain permanently in them.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

should be made (i.e. without *śikhās*) in order to let the *vaṃśadaṇḍa* pass[28] through it. According to previous texts the socket or mortice made in the *upaśūla* has an opening in front, so that one can place the *vaṃśadaṇḍa* into it. According to this text, there should be no incision in the front part of the *upaśūla* but a hole, so one must pass the *vaṃśadaṇḍa* through it.

In a standing posture two *upaśūlas* are required. One lies between the shoulders and the other exactly in the middle of the vertical length of the back. In a sitting posture one *upaśūla* between the shoulders would suffice. In these two postures the *upaśūlas* are fixed into the wall behind. But this method of arranging the *upaśūlas* is not so scientific as that described by the other texts, because according to them the *upaśūlas* lie below the *vakṣodaṇḍa* and *kaṭidaṇḍa*. In the case of a reclining posture this text describes a method which is perhaps better. Here, four *upaśūlas*[29] should be made and fixed into the pedestal. One supports the *vaṃśadaṇḍa* at its crown, the second at the shoulders, the third at the middle of the entire back (*pṛṣṭhamadhya*) and the fourth supports the feet. The account given here is better than that of the *Vimānārcanākalpa*, because here an additional *upaśūla* is prescribed in order to support the feet. This is quite necessary, otherwise the *śūlas* of the legs would not be at the desired height from the pedestal.

While constructing the armature in our experiment (Pl. VII, Fig. 17) we arranged the *upaśūlas* casually, i.e. without strictly following any of the texts cited. Actually it would be better to fix the one above the neck point while the other at the point a little above the navel and this would facilitate tying the ropes. Otherwise the difficulties may arise. As a matter of fact sometimes more than four or five *upaśūlas* are required, for both the feet as well as for both the arms (as in the illustration, in which the one employed for the right arm is not visible). So one has to decide their number according to the situation, because the texts prescribe them keeping the figure of Viṣṇu in a particular reclining position in view.

As has already been observed once, the peculiarity of installing the armature of a figure in a reclining posture lies in the greater number of *upaśūlas* and in the way these are placed. These two items are already more or less clear from the accounts of the *upaśūlas* discussed above on the basis of the different texts. But there is a point of interest. According to the device suggested by the *Samūrtārcanādhikaraṇa* holes, instead of sockets, are made in the *upaśūlas* and the respective *śūlas* are passed through them, which hold the

[28] It seems that this is the meaning of the statement : *chidraṃ kṛtvā tadādhāre śūlaṃ yantreṇa yojayet*, ibid.

[29] S.A.A., p. 81, verse 58. *Pṛṣṭhamadhya* usually means what we have explained above, but it is not clear whether the region of the buttocks is meant here. By a sheer slip we have explained one of the words of this verse, viz. *anantordhva* differently in I.T.T., p. 120, note 29, however actually it means the same as *śayanordhva*, but with reference to the deity of Viṣṇu. The implication of the word *śayanordhva* was explained in note 26 of this chapter.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

armature secure. If the sockets are preferred, then it is better, though the texts are silent on this point, to use *kīlas* in all the *upaśūlas* to hold the *śūlas*, however at first this may seem superficial in the case of the reclining figure. Needless to point out that we adopted neither of these in our attempt in assembling the armature of reclining posture, Pl. VII, Fig. 17. The rest of the work is the same as in other postures, so there is only one more point to elaborate. In a reclining posture the armature cannot be placed directly on the pedestal, because no space would be left to model the depth of the figure. So the *upaśūlas* are fixed into the pedestal in such a way as to hold the armature a little above its surface. It is only for this purpose that supports are needed for figures in a reclining posture. The height of the *upaśūlas* varies according to the curve and the nature of the posture. Moreover, the space between the pedestal and the armature varies according to the thickness of different limbs. So it is difficult to give measurements for the heights of the *upaśūlas*. The problem could best be solved by the modeller himself, working according to the nature of the reclining posture in which he is going to model the image.

These are the details of assemblage and installation of the *śūlapañjara* in all three postures. It seems that Gopinatha Rao was mistaken when he wrote that "if the image is required to be made in earth, rods (of metal or wood) must be inserted.[30] As we have seen above, it is a matter of construction, not of inserting *śūlas*.

FURTHER PROBLEMS OF THE ARMATURE IN GENERAL

Obviously the details of all the postures discussed hitherto are concerned only with straight figures. If an image is to be constructed with a curve somewhere in the body, it requires certain alterations in the *śūlapañjara*, since it is impossible to produce curves outwardly when the *śūlapañjara* is perfectly straight. Our texts specify this significantly enough: "When the figure is straight, the *śūlas* should also be straight and when the figure has any curves, the *śūlas* must also be curved".[31] By "curves" sharp angles in certain limbs, such as the arms and legs, are not implied. Such bends are possible only because of joints like elbows and knees, and one can obtain these by creating the proper angle in the different joints of the *śūlas*. What is meant here by "curves", therefore, is mainly concerned with the vertebral column which being elastic, allows the curves. They occur mainly in the torso and in the neck, but small curves may, of course, be met with also in other places such as the ankle.

If a *vakrabimba* or figure with curves is to be built up, the necessary curves in the

[30] E.H.I., Vol. I, Pt. 1, p. 50. So far the verse he quotes here is concerned there is no mention in it of the metal rods.

[31] In the K.Ś. (in the printed text, p. 245, verse 31a, and in the MS) the readings are incorrect, but the Ś.R contains better readings, p. 85, verse 30a. Also see V.A.K., M. edn., p. 82; T. edn., p. 42.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

vaṃśadaṇḍa should be made carefully. This naturally brings about many alterations in other *śūlas* of the basic frame or in those lying inside the torso. If a figure is to be made with curving sideways, one may even have to reduce slightly the total length of the *pārśvadaṇḍa* lying inside the curve, while increasing the total length of the other *pārśvadaṇḍa* lying outside the curve. Such are the special problems to be solved according to the degree and nature of the curves. The fact that nobody can schematically elaborate all these problems probably explains why our texts make a single and yet highly significant statement, leaving much to the intelligence, skill and experience of the artist.

Whether a figure be made straight (*ṛjukāya*) or with curves (*vakrabimba*), one should be definite about the measurements in general, especially about the lengths of the *śūlas*, for these correspond to the length of the limbs in the finished stage as well as to the total height of the whole figure. It would be impossible to make alterations in the measurements of the *śūlas* as the work advances. If alterations are to be made at all, one is bound to reject the armature altogether as there is no way of overcoming the difficulties that arise. Because of this the *śūlapañjara* should be constructed once and for all. One of the texts, the *Samūrtārcanādhikaraṇa*, raises this point in a different context.[32] In

[32] This subject is found in the *prāyaścittavidhi* of the S.A.A., see p. 374, verses 10-13. Two items are dealt with in this passage. This has clumsy readings and yet we shall try to explain it as best we can. The first point (verse 12) is that, if the prescribed measurements of the *śūlas*, are diminished up to one *aṅgula*, they can be filled with either gold or silver or copper. If this statement is not solely related to the *śūlas*, it would mean that the limbs or minor limbs of an image can be rectified in final finishing, if such need arises, with the said metals, irrespective of the material of which an image is made. If accordingly a stone image is repaired in certain parts with gold, one need hardly say how ugly it would look. Hence this statement should be restricted to the *śūlas* alone which remain hidden within the image. If it is so, then obviously this matter is related to the depth or width of the *śūlas*. Thus this rectification would be possible only before the ropes are tied to them, i.e. at the stage when the armature is being constructed. So the other item (verses 10-11) should deal with the length of the *śūlas*, otherwise there would not be any meaning at all. So far as the length of the *śūlas* is concerned, neither increase nor decrease is permissible. Thus, in one case rectification is possible, while in the other, it is not. In any case all the measurements must be correctly maintained. Similar matter is found in the V.A.K., but it is still less clear. However, the readings in two editions, differ, see M. edn., p. 398 and T. edn., p. 213. One point is certain, viz. this text insists on the correctness of the measurements.

As we are just now going to refer to one text as an example, a general trend is noticeable in the texts dealing with the sculpture that allows minor difference between the prescribed and the actual (i.e. obtained in the finished state of an image) measurements. In general this trend is similar to the one that is related to the *śūlas*. However similar it may be, it should not be mistaken to be identical, for any defect in the *śūlapañjara*, unless rectified at the *śūla* stage itself, persists till the end without any possibility of correction, whereas the minor difference in finishing — whether it is deliberate or otherwise — can be rectified (if so desired, in certain media at least) or left out, though here too the scope is not unrestricted. We have a statement (with corrupt readings) in the *Mānasāra* (Ch. 65, verses 91-92; Vol. III, Sanskrit text, p. 398) to the effect that up to one *aṅgula's* difference from the prescribed measurement is permissible only *in the case of minor areas of the body*. But if it is taken too literally and applied to a part like the eye, the length of which, according to many texts, is 2 *aṅgulas* and if it is executed within 1 *aṅgula's* area, it would lead to distortion. It is then clear that the difference allowed by the texts should not be taken as a licence for vagary. Thus, when one considers the implications, one finds that the scope is restricted even in the case of the limited allowance given by the texts in general terms. One must, therefore, understand different statements of the texts in the spirit in which they are made. Otherwise one is

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

keeping with the general method of the *Āgama* literature in prohibiting and warning against certain defects, this text says as a curse that one should never increase or decrease the measurement of a *śūla* and that he who does so, will perish. This is an obvious warning against carelessness in determining the proper length of the *śūlas*, because such a defect will result in an ugly form.

One is grateful to the genius of ancient theorists, who, being artists themselves, invented and developed a system of anatomy which has been a boon to generations of practising artists. This system provides a scientific yet easily practicable knowledge of anatomy. The one who studies it can easily tackle the problems of constructing the *śūlapañjara* and can always be reasonably certain in his work.

Thus we have hitherto noted all the details that are found in the texts about the method of assembling and installing the *śūlapañjara*. We may now discuss certain qualities that this *śūlapañjara* possesses, although the texts do not touch on them.

SOME REMARKS ON THE VIRTUES OF THE ARMATURE

All but three of the *śūlas* with which the *śūlapañjara* is constructed represent the bones of a living body. This point is quite obvious from their very names, so we need not take trouble to demonstrate it. Some mention may, however, be made of those *śūlas* which do not represent any single bone. The *vakṣodaṇḍa* does not, strictly speaking, represent one bone, but it certainly does the shoulder joints, in other words, a number of bones together. The *pārśvadaṇḍas* may be taken to represent ribs. (From the functional point of view they are of great importance in the clay image, as we shall see shortly.) It is undoubtedly a significant description when our texts mention the *śūlas* as the bones of a living body.

Every detail in the construction of the *śūlapañjara* such as the shapes of the different *śūlas* or the method in which the various joints are made, etc. has a certain value and is full of meaning. One special feature of the *śūlapañjara*, that should not be overlooked is the frame in the thoracic region or trunk. This frame is composed of the *kaṭi-* and *vakṣo- daṇḍas* and both the *pārśvadaṇḍas*, and is, as we have seen, attached to the *vaṃśadaṇḍa*. Each of the component parts has its particular function.

bound to err, like P.K. Acharya who, with reference to the same statement of the *Mānasāra*, observes (D.H.A., p. 240) as follows: "These rules are for general guidance, there is no restriction in altering them for aesthetic reason". It is greatly misleading to put it in that way. In spite of our above remarks, which might have given a rigid view to the reader, we personally agree that the iconometry, "Proportionslehre" is for the general guidance, but it is a very complicated matter to interpret in a limited space. It cannot be done lightheartedly as Acharya does. Moreover, this aspect is not touched in the passage referred to. Further, he ignored two facts: firstly, this allowance is of only one *aṅgula* and secondly, it is permissible in the case of minor areas only.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

The *vakṣodaṇḍa* has bigger dimensions than the other *śūlas*. This appears reasonable when we remember that it has to carry the weight of the arms. Moreover, many Indian, especially Hindu, deities have multiple arms carrying various emblems. So in order to carry this burden the *vakṣodaṇḍa* must have bigger dimensions than the other *śūlas*.

The *pārśvadaṇḍas* generally help the *vaṃśadaṇḍa* to carry the weight of the upper body. Their special purpose is to prevent both ends of the *vakṣodaṇḍa* from falling down. In the case of deities with many arms or hands holding different emblems this danger increases and without these *daṇḍas* there is no safety.

The *kaṭidaṇḍa* represents the pelvis or rather the pelvic girdle, not of course in form but in function. In a living body the pelvic girdle receives the weight of the upper body from the vertebral column and transmits it to the ground through the legs. The *kaṭidaṇḍa* in an image has exactly the same function with the difference that it receives the weight not only from the *vaṃśadaṇḍa* but also from the *pārśvadaṇḍas*. Thus all the component parts of this frame have their own function.

The *vaṃśadaṇḍa* is not a part of this frame, but its base, for it is to this *daṇḍa* that the *kaṭi-* and *vakṣo- daṇḍas* are attached. Since no nails are used to fix the four components of this frame, the latter cannot be stable without the *vaṃśadaṇḍa*. In view of this stability, which is highly necessary, the shape of the *vaṃśadaṇḍa* gains a great significance. When this is round, there is a chance for an accidence that in course of employing different materials—particularly the ropes and clay—the basic frame may turn this or that way from its desired position. But this can be averted, if the *vaṃśadaṇḍa* is made square or at least octagonal, for the sharp edges or angles of these shapes will not allow either *vakṣodaṇḍa* or *kaṭidaṇḍa* or the both to turn away from the desired point. Of these two shapes the square is more safe for the obvious reason that its edges are sharper than those of the octagonal. In chapter VIII, item 1 we have noted that some ancient authorities prescribe the round shape as the desirable one, in some cases at least, or as an alternative course. But to suggest it as an alternative course itself does not seem to be a good advice and if so, it goes without saying that its desirability is too questionable. Irrespective of deities, the square is the more desirable shape. Even if a twist is to be brought in the chest of a certain image, it seems better to create the edges of the *vaṃśadaṇḍa* accordingly at the desired points. Thus the *vaṃśadaṇḍa* is the most important in clay images of this technique, as is the vertebral column in living bodies.

The *upaśūla* or support protects the image from the danger of sagging, crumbling or even from collapse owing to the weight of the wet clay while it is in the process of building. Therefore, the *upaśūla*, though external, is highly important especially for a big image. It is all the more so, because it lies in the chest immediately below the *vakṣodaṇḍa*. Even in our technically advanced age experienced teachers recommend giving a support to a

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

clay image at the chest, describing this place as the most suitable from the point of view of technique and the execution of the figure.

There is one more item important to the technical qualities of the *śūlapañjara*. Except in one place, and that only as an alternative method, iron is nowhere used; whenever metal is needed, copper is used instead. We can realise the importance of this point, when we take into account that everything used for the construction of the *śūlapañjara* remains enclosed in clay so that there is the danger of rust if iron is employed.

This is all that we could learn about the *śūlapañjara* and so we can now proceed to the next stages in the process of making a clay image.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

Chapter XI

THE METHOD OF EMPLOYING THE VARIOUS MATERIALS

THE METHOD OF APPLYING ASTABANDHA

After fixing the *śūlapañjara* the next step in the process of building up a clay image is the application of *aṣṭabandha*, a kind of glue or varnish. There is little[1] to note in this matter, except that this glue should be carefully applied to the entire *śūlapañjara*, before the ropes are tied to it.

THE RAJJUBANDHA OR METHOD OF TYING ON THE ROPES

As we have seen in chapter III the *suṣumnā*, *iḍā* and *piṅgalā* are the three most important ropes among the twenty-eight major ones, and these must first of all be tied to the armature. All three ropes run along the whole course of the *vaṃśadaṇḍa*[2] on its front side. These should be tied together to the *vaṃśadaṇḍa* at the point of the navel,[3] the *suṣumnā* in the middle, the *iḍā* and *piṅgalā* at its left and right side respectively. From the navel these three ropes should be taken up separately to the centre of the eyebrows (*bhrūmadhya*) where they should be united, not by placing them closely side by side but by merging them into one rope.[4] From there onwards this rope which is the united form of three ropes should be taken up again to the top of the *vaṃśadaṇḍa* where it should be split into seven different ropes, each of which bears a name of its own,[5] as mentioned previously.

These seven ropes should flow down into different places in the following way: The *Gāndhārī* comes down to the right eye where it ends, while the *hastijihvā* does the same on the left side. The *pūṣā* and *yaśasvinī* run down side-ways, the former ending at the right ear and the latter at the left. The *alambuṣā* flows down along the front as far as the *liṅgamūla* where it ends. The *kuhū* comes down along the back to the anus (*guda*) and the last one, the *śaṅkhinī*, runs down from the front to the navel where it ends.[6]

[1] As in this case, there is also little to explain about the method of application of cloth. Apart from this, the application of clay cannot be totally separated from the method of tying on the ropes. Therefore we thought it better to deal with all these items in one chapter, as against the method we have followed hitherto of dividing up the topics into different chapters.

[2] K.Ś., p. 250, verse 8b; Ś.R., p. 89, verse 22b.

[3] The Ś.R. reads *rajjuvartma* (p. 88, verse 14a), but the K.Ś. *rajjubandha* (p. 250, verse 6b), which seems correct.

[4] See chapter III, note 8.

[5] Ś.R., p. 88, verses 17-18.

[6] Ibid., pp. 88-9, verses 19-20. The first hemistich of the first verse referred to here, reads incorrectly. It is, however, found in the MS with proper readings, though not grammatically correct: "*gāndhārī savyanetrāntaṃ*

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

The lower parts of the three most important ropes (*suṣumnā*, *iḍā* and *piṅgalā*) should be brought from the navel down to the lower end of the *vaṃśadaṇḍa*, just as their upper ends are taken up to its top.[7]

These remarks on the method of tying on the ropes may be elaborated.[8] First let us consider how these ropes are united. The fibres of the ropes are interwoven, not the ropes themselves, which means that the individual forms of these three ropes cannot be retained. This unified rope at its beginning, i.e. at the centre of the eyebrows, will measure two *aṅgulas* or a little more in diameter, which is also the total diameter of the three ropes together. At its top this single rope will measure three *aṅgulas* or a little more in diameter, which is also the total diameter of the seven ropes emerging from it. We shall now see how the three ropes and their unified form, should flow out on the armature.

At the point of the navel three major ropes are tied on the front surface of the *vaṃśadaṇḍa* for the first time, of course with the help of a minor rope by winding it round the former twice or thrice (as in Pl. IV, Fig. 5, which may be consulted, whenever necessary in this context, until another figure is referred to). They should be taken upwards till the lower plane of the *upaśīla* below the *vakṣodaṇḍa*, where they should be tied again with a minor rope, as these mount here on a slightly higher plane (i.e. the width of the *vakṣodaṇḍa*), passing through the socket of the *upaśīla*. For the third time they should be tied in the same way on the upper plane of the *vakṣodaṇḍa*, here for a different reason, viz. they flow at this point into the depth a little way again to touch the *vaṃśadaṇḍa*. It is better to tie them for the fourth time at the point where they unite, viz. at the centre of the eyebrows. And, then, the unified rope should be tied again towards the end of the *vaṃśadaṇḍa*, i.e. at the point from which it branches out into seven ropes (which are gathered together into a bulk above the *vaṃśadaṇḍa* so that in the photograph they do not obstruct the points to be illustrated). Similarly, the three major ropes should also be tied for the last time below the lower plane of the *kaṭidaṇḍa*, not only because of the fact that it is the lower end of the *vaṃśadaṇḍa*, but also for the reason that they ascend to as well as descend from the front plane of the *kaṭidaṇḍa*. The three major

hastijihvetarākṣikaḥ". The direction in which these ropes should flow, is not clearly stated in the texts, yet it is obviously implied from the points to which the ropes are said to be brought.

[7] Although this is not literally stated in the texts, it is clearly implied.

[8] This also we have explained on the basis of common sense, not on the textual basis.

We thought certain matters are similarly plausible, hence we have accordingly explained them in I.T.T., p. 129, para. 2 and p. 130, paras. 2-3. Briefly stated these are as follows: The three major ropes and the three of the seven ropes of the head that flow down into the trunk, touch only some points of the armature, such as, the upper part of the *vaṃśadaṇḍa*, navel, front and back planes of the *vakṣodaṇḍa* as well as the *kaṭidaṇḍa* and the *liṅgamūla*, while in the remaining areas they would be free, so that their flow broadly suggests the shape of the trunk in its major recesses and projections. When the experiment was undertaken we realized that this method was unsound and impracticable. It is unsound, for it does not lend any strength to the armature, and impracticable, as it stands as an obstacle in the application of the clay after the minor ropes are tied around them. But what we have stated there (ibid. p. 129, para. 3) in connection with the way of tying the seven ropes in the head portion is not wrong, though we have now added a few new points.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

ropes are thus tied on the *vaṃśadaṇḍa* for five or six times. If not, they remain loose and as a result become rather insecure apart from that they cannot contribute to the strength of the *śūlapañjara*, which they do when tied.

The seven ropes, issuing from the single rope, flow down to various points in the body as specified earlier. The four of these ending at the eyes and ears, are also tied to the armature, but not in the usual manner. As we shall see, the minor ropes are tied across all these major as well as medium-sized ropes around all the *śūlas*. While tying these minor ropes across the seven ropes, one should so contrive that they remain somewhat loose without touching the *vaṃśadaṇḍa*. This would be possible, when the ends of the four ropes, running down only up to the eyes and ears, are bent at their proper and respective points and minor ropes are tightly wound only over their bent parts while other areas are left free. Likewise, the two ropes coming down from the front up to the navel and genital organ respectively are to be held somewhat loose at some distance and tied onto the *vaṃśadaṇḍa* at or above the area of the chin by way of tightly winding the minor ropes over them from the chin downwards and thus, leaving them loose in the head region without touching the *vaṃśadaṇḍa*. The same method should be followed in the case of the seventh rope running down from the back side of the head up to the anus. The point where this rope should be tied is above the occipital protuberance or slightly above the region of the end of the nose. It does not, however, mean that the minor ropes should not be wound around the *vaṃśadaṇḍa* in the region in which these seven ropes are tied. They must be wound from inside those ropes while the latter should be left loose. In this way a net is formed in the head region to hold the clay (Pl. IV, Fig. 7). Though the end of the *vaṃśadaṇḍa* is present in the region of the head, it is too thin to serve as sufficient support for the great amount of clay that the head requires. But the net formed in this way would serve the need of holding a heavy lump of clay.

After clarifying the way these ten ropes should be tied on, we now turn to the method of tying on the other ropes in the legs. The beginnings of the three ropes—*suṣumnā*, *iḍā* and *piṅgalā*—lie near the *liṅgamūla*, the genital organ. From the beginning of each rope six ropes emerge. We have already noted the names of these eighteen ropes in chapter III. The ropes which emerge from the *piṅgalā* flow into the right leg, while those which emerge from the *iḍā* flow into the left, for these two ropes lie on the right and left sides of the body. The process of tying the ropes to each leg is of course the same.

The six ropes should be wound a few times round the thigh or *ūruśūla* at its beginning. In course of winding, each rope should be hung at a given point in the girth of the *ūruśūla* so that all of them are hung round it at different points. They should all hang down to a point somewhat above the ankle. There again, they should be wound few times round the *jaṅghāśūla* and in course of winding they should be united.[9]

[9] K.Ś., p. 250, verses 12-13. The same passage is found in the MS with slightly better readings: "*. . . dau rasanāḍyastu savyapādāgramūlakam// ūrumūlaivamāśritya parito nalakāntakam/ lambitāste samākhyātāstā vai piṅgalagā . . .//*"

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

In this connection three questions arise: (1) how do the six ropes emerge from a single rope, (2) how should one hang them at different points of the girth of the *ūruśūla* and (3) how should they be united at the ankle? These points are not clarified in the texts, but are left to the experience of the artist.

(1) At the lower end of each of the ropes *iḍā* and *piṅgalā* the fibres of the three strands should be left loose. Out of these one should make six ropes distributing the total amount of the fibres of either *iḍā* or *piṅgalā*, as the case may be, at the same time[10] adding some more coconut fibres to obtain the desired diameter.

(2) One can form the six ropes into a sheet or pad arranging them consecutively, and wind the whole once or twice round the *ūruśūla*. Then one can hang one rope which is lying above the sheet and turn the rest over it. In this way all the first five can be hung gradually from different points. One may wind the last rope once more and push its end into its own circle from above loosening it a little, and then tighten the circle by pulling the end slowly. Thus when all the six ropes are hung at desired points they should be tied with a minor rope by winding it around the *ūruśūla* twice or thrice just below the circuits of the pad made of the six ropes, as in Pl. IV, Fig. 5.

(3) At a desired point above the ankle one should tie these hanging ropes with the help of a minor rope, carefully seeing that they should remain in proper places. One may then take one rope above the ankle and turn it once or twice round the *śūla* over the other ropes. One should push its end from above into the circle made by the rope itself and tighten the circle by slowly pulling the end. Then one should take the end to another rope and join its fibres to those of the other rope by loosening their respective strands. In this way one may make a single rope out of the fibres of all the six ropes creating at the same time two new strands. Of course one has to reduce most of the fibres at this point. When all the ropes have been united, one should wind the resultant single rope a few times and then tie it properly. (This process can be better noticed in the left leg as well as in the left arm in Pl. IV, Fig. 5. This photograph was taken before the fibres were trimmed. These fibres remained loose, for they were left out in course of the unification of a rope with the succeeding one. Thus they belong to both the ropes. See also Fig. 6, where these fibres were trimmed.)

In the same way six ropes emerge from the lower end of the *suṣumnā* rope (see Pl. IV, Fig. 6 to observe the points described in this paragraph). Three of these flow into the right arm

Taking the readings from these two versions, we may correct it thus: *tāsvādyā rasanādyastu savyapādorumūlake// ūrumūlaṃ samāvṛtya parito nalakāntakam/ lambitāstu samākhyātās tā vai piṅgalagā matāḥ//* This passage is, however, found in the Ś.R. (p. 89, verses 26-27) in a rather different form, although it seems to mean the same.

[10] Each of these six ropes with its three strands measures three *yavas* in diameter and so these six ropes make eighteen *yavas* together. Each of the ropes *iḍā* and *piṅgalā* measures only a little more than 5 *yavas* in diameter. So one has to add some more fibres to obtain the desired diameter of 3 *yavas* in the case of each of these six ropes.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

and the other three into the left. The ropes which flow into both arms run upwards as far as the *vakṣodaṇḍa* on the respective sides of the *vaṃśadaṇḍa*. Since their roots lie at the centre of the front plane of the *vaṃśadaṇḍa* the question arises how to take them to its sides. Moreover, there is the *kaṭidaṇḍa* here to create an additional problem. The following points may be noted in this connection. They should be arranged at first as a pad or a sheet and taken through the bottom of the *vaṃśadaṇḍa* up to the lower plane of the *kaṭidaṇḍa* at the back side, where they should be tied with the help of a minor rope by winding it around the *vaṃśadaṇḍa* twice or thrice. They should be tied here, because they mount over the *kaṭidaṇḍa*. After they have reached the upper plane of the *kaṭidaṇḍa* they should be taken near the *vaṃśadaṇḍa*. Then they should be divided into two groups to flow upwards along the respective sides of the *vaṃśadaṇḍa* and at the same time each group should be so arranged that they spread over the entire given side plane. Now again they should be tied in this position to the *vaṃśadaṇḍa* with the help of a minor rope. When they are taken upwards as far as the lower plane of the *upaśūla*, it obstructs their flow, and for this reason they should be tied at this point. Then they mount on the upper surface of the *vakṣodaṇḍa* on the respective sides of the *vaṃśadaṇḍa*. In this course of mounting they cannot flow straight, because the *upaśūla* as well as the *vakṣodaṇḍa* obstruct the flow. Hence they should be taken upwards either from the front or from the back of the *vakṣodaṇḍa*. When they are taken from the front they render an additional strength and hold the *upaśūla* and the *vakṣodaṇḍa* together and more secure, and hence it is perhaps advisable to do so (Pl. IV, Fig. 6), though it would not be objectionable if they are taken from the back. After they are taken to the centre of the upper surface of the *vakṣodaṇḍa* they are tied again to the *vaṃśadaṇḍa* with the help of a minor rope. From there they run on the upper surface of the *vakṣodaṇḍa* to their respective sides in the form of a pad and reach the respective *bāhumūlas* or deltoid regions, where they unite by losing their individual forms. After making a few circuits round the *bāhuśūla* the single rope divides itself into eight minor ropes. This splitting takes place in the course of the circuits round the *bāhuśūla*. Consequently the minor ropes which emerge from the single rope hang at different points of the girth of the *bāhuśūla*, as in the case of the six ropes flowing into the leg. They hang down to the wrist (*maṇibandha*) where they make a few circuits. While doing so they become one in the same way as the ropes of the legs above the ankles[11] (see Pl. IV, Figs. 5 and 6).

If a certain deity has more than two arms the ropes should be tied on all arms in the same way.[12] It is obvious that the ropes for these additional arms cannot be created from the *suṣumnā* rope as this would be impracticable, if not impossible. So it probably suffices, if the extra

[11] K.Ś., pp. 250-51, verses 15b-19; Ś.R., pp. 89-90, verses 28-31.

[12] This passage in the Ś.R. (p. 90, verse 32a) is quite corrupt and so are the readings in the printed version of the K.Ś. (P. 251, verse 19b), but in the MS of the latter they are correct and run as follows: "*ekaṃ vānekahastaṃ vā hastaṃ pratyekamācaret*".

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

ropes are tied to the beginning of the respective *bāhuśūlas*. After that it would not be difficult to follow the same method for the remaining work of tying the ropes to the additional arms.

These are the methods of tying the major and medium-sized ropes on which the minor ropes (*āvṛtanāḍīs*, lit. encircling *nāḍīs*) are to be wound. The minor ropes should be wound clock-wise around every *śūla* on the major ropes. After winding the minor ropes at certain intervals the *śūlapañjara* will look like a dried *pipal* (Ficus Religiosa) leaf (*jīrṇāśvatthapatravat*[13]).

After this stage one should create with some minor ropes, a lotus with eight petals at the chest. Its stem should extend to the navel, where it should be tied to the *suṣumnā*[14] (Pl. IV, Fig. 7).

This is all concerning the method of tying the ropes that is found in the texts.[15] But there are a few points — not found in the texts — which should be elaborated. One has to fix the ropes — major ones or medium-sized — running vertically on the *śūlas*, at several points with the help of the minor rope by winding it round the given *śūlas*. We have mentioned some of these points by name in course of our description as the occasion arose while we have not touched the others, for instance, those related to the arms, but they can be seen in Figs. 5 and 6 (Pl. IV). Hence one should tie them wherever necessary. Generally speaking, here the rule is that they should be tied or fixed with the help of minor ropes in all those points where, for some reason or the other, such a situation arises that they do not touch the surfaces of the *śūlas* on which they are to run along the length. Take for example, the leg. If it has a bend at the knee, then the ropes do not follow its length and they should be made to run in the desired way by tying them at the knee — may be also at some other points — with the help of minor ropes. But the artist should be very careful in one respect. While fixing them in this way the vertical ropes should always be tightened gently, but never excessively. For in that case, there is a danger of changing the position of either individual limbs or of the whole armature, subtle though it may be in the beginning, but at the end it may lead to a gross defect in the final stage of the image. By the time the tying of the vertical ropes is over, one realizes unexpectedly how the armature is becoming firmer and stable and when the minor

[13] K.Ś., p. 251, verses 22-25a; Ś.R., p. 90, verses 33-35. The reading *pārśvam* of the last hemistich of the passage referred to here, as found in the latter work, is incorrect; it should be *paścāt*, as in the K.Ś. But in view of the simile *jīrṇāśvatthapatravat* the reading *nirandhram* (or *nīrandhram*) as found in the Ś.R. and the MS of the K.Ś. seems unreliable.

[14] K.Ś., p. 251, verses 25a-26; Ś.R., p. 90, verse 36.

[15] The V.A.K. counts only 14 major ropes apart from the minor ropes, but it is not clear how these 14 major ropes should be tied, as not a word is said about it. If one studies the school of physiology in which the major *nāḍīs* are considered to be 14, a clue to fixing these ropes might be found. A special point that should be noted in the account given in the V.A.K. about the method of tying ropes, is that cotton thread should be tied on the entire armature on top of the layer of minor ropes (see M. edn., p. 86; T. edn., p. 44; in the latter some sentences are missing).

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

ropes are wound throughout the armature it becomes still firmer and more stable which one may not believe in the beginning. That the ropes serve the purpose of making the armature firmer has been realized by us only after we have made the experiment. But the ropes have also another function which is rather the main function. That is this. If the clay is applied only to the armature, its thickness increases and the danger may arise of the entire bulk of clay falling away. It seems, therefore, highly desirable to use some additional material in order to hold the clay firmly, and for this purpose coconut ropes may prove good material because of their fibrous and rough surface. It is clear then that in the ancient Indian technique the ropes were meant to serve the same purpose as the butterflies in the modern practice of clay modelling in Europe. This is proved by two facts — one is the net-like arrangement of the ropes on the armature, which is described as similar to a dried *pipal* leaf and the second is the prescription that a lotus should be made at the chest with ropes. Here it is in the region of the chest where a heavy bulk of clay is to be applied. Thus the lotus created with the ropes here has a function, though it may at first appear to be fanciful or based on mysticism. The purpose of tying ropes onto the armature is, therefore, not only to fill the space but also to hold the armature as well as the clay firmly.

THE METHOD OF APPLYING CLAYS

The three varieties of clay prepared separately in the process described in chapter IV are used in the following way. One should apply clay to the *śūlapañjara* (see Pl. V, Fig. 8) and wait until it has dried up completely. Then one should wind the minor ropes for the second time clock-wise around the first layer of clay over the entire body (see Pl. V, Fig. 9). The space between these two layers of ropes varies from one to three *aṅgulas* in different places of the body. In other words the depth of clay that should be applied in between the two layers of ropes measures from one to three *aṅgulas*, according to the mass or form of the muscles in various parts of the body.[16] On the second layer of ropes one should again apply clay, but the ropes should be used no more, either on this second filling or in any succeeding stage.[17] When this second filling of clay is also quite dry, one must apply clay for the third time. Thus, there are now already two layers of ropes and three fillings of clay on the *śūlapañjara*.

The question when and where the three varieties of clay are to be used is decided not on the basis of the layers but on the basis of the depth. The depth in different parts of the

[16] The same matter is expressed differently in the K.Ś. and the Ś.R. The readings in the printed version of the K.Ś. are faulty (see p. 253, verse 22b). The MS of the same, however, reads correctly: "*tadrajjuvyantaraṃ vipra ekadvitryaṅgulaṃ tu vā*". The Ś.R. expresses it in terms of clay: "*mṛdghanaṃ candranetrāgnimātraṃ yogyavaśād bhavet*" (p. 93, verse 24b).

[17] The V.A.K. explicitly prohibits this (M.edn., p. 88; T. edn., p. 45; in the latter the word *na* is missing). Neither the Ś.R. nor the K.Ś. prohibits it literally. Nor does any of these texts mention the further use of the ropes.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

body may vary according to the muscular formation. Irrespective of this variation, one should divide the depth between the surface of the armature and the final surface of the entire body into four equal parts. The *anūpā* (*mṛt*) clay should be used up to the end of the first part,[18] the *miśrā* (*mṛt*) clay up to the end of the second part and the *jāṅgalā* (*mṛt*) clay up to the end of the third part.

Here we should note that the texts give instructions[19] to fix varieties of precious stones in the last coating of the clay (i.e. *jāṅgalā*) — obviously when it is still wet — at several points in the image, such as the eyes, ears, shoulders, the throat, chest, etc. These stones are covered by *śarkarākalka* with which further coatings are given in order to finish the image. We need not enter into further details of this subject, for it has no bearing on the technique. Only this much may be mentioned that all these precious stones are of a high grade.

The ropes may also occur within the respective thicknesses of these three parts, but this does not matter. However, one should keep strictly to the clay prescribed in a particular part.[20]

The fourth part of the thickness should be filled in with different materials such as *śarkarākalka* or lime-stone-paste, *paṭa* or cloth and *varṇa* or colours, to the details of which we now turn.

THE METHOD OF USING LIME-STONE-PASTE

In chapter V we have already noted that lime-stone-paste is prepared for different coatings in various ways and proposed to refer to the three main varieties as the first, number two and number three *śarakarākalkas*. These are to be used in the following manner. (As we have left out this item altogether in our experiment, we have no pictures to illustrate this aspect proper, though there are some illustrations relevant to this stage of work, to which the references are made at appropriate places.)

[18] This is a problem concerning the relative amount of stickiness that different clays are supposed to possess. This issue arises because of the bad readings, as available now in the texts, which we have elaborated in chapter IV, note 3.

[19] V.A.K., M. edn., p. 88; T. edn., p. 45 and K.J.K., p. 68. The editor of the latter work gives the heading to this topic as *bimbe ratnanyāsaḥ*, but it is to be seen how far this would be correct.

[20] K.Ś., p. 253, verses 24-25; Ś.R., p. 93, verses 25b-27; S.A.A., p. 80. The last mentioned work does not prescribe the use of ropes in two layers. It mentions the four-fold division of the depth and states that one should fill in the clay up to the end of the third part, but does not prescribe the varieties of clay in these three parts. The V.A.K. neither mentions the four-fold division nor the use of varieties of clay in them. In connection with the application of the clay a peculiar sentence is found in its M. edn. (p. 88). To quote: "*hastena vinā sarvāṅgeṣu karaṇḍikayā lipya*". But this method is quite impracticable. Also in the T. edn. one finds a sentence in this place which, as available in print, is a little different in wording, viz. "*sarvāṅgakaraṇīkayāmālipya*" (p. 45). This needs further investigation.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

The first *śarkarākalka* should be used for the first coating.[21] This seems the *latest* stage when the copper plates should be fixed at appropriate points as support for the ears (see Pl. I for their shape and Pl. IV, Fig. 10 for their fixation). This is necessary, for every succeeding layer is applied after the previous layer is dried completely and these plates cannot be pushed into the clay or *śarkarākalka*, if one waits until almost the final stages. When this is dry the three varieties — a, b and c — of the number two *śarkarākalka* should be applied in the same order. The layers should not be thicker than two or three *yavas*. When the preceding layer has dried one should slowly apply the next, carefully avoiding the recurrence of holes or cracks.[22] After the application of this number two *śarkarākalka* one should wait two months or one and a half months, or at least one month, before doing any further work. Then the number three *śarkarākalka* should be applied up to the end, i.e. till the prescribed measurements of the particular parts of the body are obtained. These measurements[23] should be checked very carefully at each point. All the minor details of the *aṅgas*, *upāṅgas* and *pratyaṅgas* should be brought out properly while applying the number three *śarkarākalka*. In the terms of this technique, the hands, legs, stomach, etc. are called *aṅga*, ornaments are called *upāṅga* and vehicles and emblems are called *pratyaṅga*.[24] These are the details of application of *śarkarākalka*[25] and so

[21] K.Ś., p. 254, verse 7b. The same is found in the MS in the following way: "*etatkalkaṃ samālipya prathamaṃ kalkameva hi*".

[22] K.Ś., p. 254, verses 9b-10. The same are read in the MS as follows:

krameṇa lepayet kalkaṃ dviyavaṃ triyavaṃ ghanam ।
śanaiḥ śanaiḥ kramāllipya bhinnacchidraṃ vivarjitam ॥
dvimāsaṃ sārdhamāsaṃ vā māsaṃ vā śoṣayettataḥ ।

[23] K.Ś., p. 254, verses 11b-12a. The same are read in the MS in the following way:

tataḥ svacchajalaiḥ kalkaṃ pramāṇāntantu pūrayet ॥
bahu kṛtvā pramāṇaṃ tu śodhyamānaṃ samānayet ।

[24] K.Ś., p. 254, verses 12b-13. In this place the MS reads as follows:

aṅgopāṅgaṃ ca pratyaṅgān kalpayellakṣaṇānvitam ॥
hastapādodarādīni aṅgamityabhidhīyate ।
upāṅgaṃ bhūṣaṇaṃ khyātaṃ pratyaṅgaṃ cihnavāhanam ॥

These three words are used in a number of other disciplines too, for instance, in the dance and accordingly often the *aṅga* means the main limbs like the legs and arms; the *upāṅga* conveys parts of the head like the nose, eyes, etc. and the *pratyaṅga* connotes the neck, shoulders, etc., though all belong to the body. But every science has its special needs and different items are classified here with an appropriate terminology according to the requirements of this branch of learning. Even a casual consideration would reveal that the present classification is made on the following principle. Irrespective of whether a limb is major or minor, all that is originally belonging to the body or all that is innate is considered to be *aṅga*. The ornaments, though not innate, remain on the body, as though they were its parts, at least for a considerable length of time. Hence they are named *upāṅga* (sub-limb). The emblems and vehicles are termed *pratyaṅga* (further division), for they are used when the occasion arises. Obviously, while creating this terminology the life is kept in view, but not the statue, on or at which the emblems and vehicles often remain inseparable like the ornaments, if not like the parts of the body. In this way the present classification and the terminology have considerable significance and serve the needs of this discipline.

[25] The other texts do not mention the application of *śarkarākalka* in various layers, nor do they prescribe the varieties of gum to be prepared and employed in accordance with the layers. Except for this difference, more or

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

this is the stage when cloth should be pasted on the entire body of the image. (This is actually the final stage of the modelling proper, but not of the image, for there are two more items: the cloth and the colour, still to be employed before the image could be finished. As we have left them out in our experiment, Pl. V, Fig. 11 and Pl. VI, Figs. 12, 13 and 14 may be seen to have a rough idea of different views of a finished image, but without these two items.) There are certain points worth noting in this elaborate method of applying lime-stone-paste. The application of the *śarkarākalka* in several layers helps in repairing the cracks that have already occurred and ultimately it prevents the appearance of new cracks. Every succeeding layer contains less gum than that lying immediately under it; thus, the lower the layer, the greater the amount of gum. This is one of the technically significant points. Moreover, every succeeding layer is whiter than that lying immediately beneath it, because the *śarkarākalka* used for succeeding layers contains less gum. This is useful since the whole image has to be painted. Similarly, the use of cloth protects the image against cracks and gives a fine surface for the paint.

THE METHOD OF PASTING THE CLOTH[26]

One should take a certain amount of the dried secretion of Feronia Elephantum (*kapitthaniryāsa*) and add three and a half times the amount of water to it. With this gum one should paste[27] the cloth[28] onto the entire body of the image. (We have also left out this item, but Pl. XXI, Fig. 56, belonging to the modern practice, may be consulted to have a rough idea, though the process of pasting and the medium is different.)

On the surface of this cloth one should again apply the number three *śarkarākalka* but this coating should be one eighth of a *yava* in thickness.[29]

Ten days after this the further work should be done with a different material which is prepared in the following way. One should take a certain amount of Eragrostis Cynosuroides (*kūrca*[30] = *kuśa*) and grind it finely on a grinding-stone, adding a sufficient amount of the dried

less the same methods are prescribed by the other texts also. See S.A.A., pp. 76-7, verses 1-17; K.J.K., p. 68 and V.A.K., M. edn., p. 89; T. edn., p. 46.

[26] As we have pointed out in chapter V, note 6, many details concerning the *śarkarākalka* and the other items are missing in the Ś.R. (p. 93), so it is not surprising that there is also no mention of the cloth or its application.

[27] K.Ś., p. 254, verse 14. The same reads in the MS in the following way:

kapitthasyaiva niryāsāt tatsārdhatriguṇāmbhasā l
paṭācchādaṃ tu kartavyaṃ kalkamālepayettataḥ ll

[28] Some of the texts insist that the cloth for this purpose should be smooth, thin or fine, and quite white. See V.A.K., M. edn., p. 89; T. edn., p. 46; S.A.A., p. 76 and K.J.K., p. 68.

[29] K.Ś., p. 254, verse 15a, The same reads in the MS as follows: "*tatkalkaṃ tu yavāṣṭāṃśam*".

[30] K.Ś., p. 254, verse 15. The same reads in the MS as follows: "*.....daśāhaṃ daparastataḥ/ niryāsatoyaṃ kūrcena secapeṣyā tu peṣayet*"//. The word *kūrca* has several meanings, but here it may indicate two things. One is the same as we explained above. The other is hair, particularly that of the beard. In Tarimia or Eastern Turkistan,

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

secretion of the tree Feronia Elephantum. This is the paste with which one should work out the details of ornaments, etc. Now the pasting of the cloth is finished and the ground for the paint can be prepared.

THE METHOD OF PAINTING THE COLOURS

Before applying the desired colours[31] one should prepare a proper ground, otherwise the colours do not shine. There are various stages in preparation of the ground in which different materials are used. To these materials, as well as to the colours, some medium or binding element should be added. Let us first discuss this medium.

The text calls the medium *bandha* and mentions that it has three varieties. All these are prepared from only one material, namely the dried secretion of the tree Feronia Elephantum (*kapitthaniryāsa*) by adding water to it in different quantities. The names of these three varieties are *svaccha*, thin (or clear); *madhya*, medium, and *medura*, thick. The text does not clarify in terms of measurement how much water should be used for these three varieties of *bandha*, but from the description of their nature one can gain some idea of the amount of water. The *svaccha* variety of *bandha* should look like oil, the *madhya* variety like honey and the *medura* variety like thin yoghurt.[32] The text describes where and when these three kinds of *bandha* should be used,[33] but owing to textual difficulties this matter cannot be explained now. Relying on common sense we may, however, assume that the *svaccha* variety of *bandha* is meant for use in colours as well as in those materials with which the ground is prepared. *Vajrabandha*, gelatin, seems to be prescribed as an alternative medium for this same purpose,[34] but the dried secretion of the tree Feronia Elephantum (*kapitthaniryāsa*), seems to be much preferred.[35]

where the ancient images have been discovered in abundant quantities, there had been the practice of mixing animal hair in the clay, though not so frequently or so universally as some writers have propagated without sufficient observation. On the basis of the limited Central Asian practice one may infer that by *kūrca* our texts too may mean the hair in general, though it might not be of the beard or so. But it seems quite unlikely for the following reasons. The K.Ś. instructs one to grind it with gum. Moreover, the other texts too use this word in many places in the sense of *kuśa*. Therefore we have taken this meaning here, as well as in the place where the process of the preparation of the number three *śarkarākalka* is described. In this connection see the preparation of clay in Indo-Afghan practice in chapter XIII, particularly note 56.

[31] As in the case of every item the K.Ś. deals more elaborately with the application of colours than the other texts, but owing to textual problems we are able to give only a succint and tentative account.

[32] K.Ś., p. 258, verses 12-13. The same verses read in the MS as follows:

bandhaṃ svacchaṃ ca madhyaṃ ca udaraṃ (manthura or medura?) ca tridhā bhavet |
kapitthasyaiva niryāsaiḥ tribandhaṃ tu prakalpayet ||
svacchaṃ tailopamaṃ khyātaṃ madhyamaṃ madhusādṛśam |
taruṇā dadhisādṛśyaṃ snigdhaṃ taṃ manturaṃ bhavet ||

[33] K.Ś., p. 258, verses 14-15.

[34] Ibid., pp. 258-9, verses 15b-16a.

[35] Ibid., p. 259, verse 17a.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

When all the work that should be done with *śarkarākalka* is over, one should give a coating[36] of *cikkaṇa*,[37] i.e. the clear water obtained from the pots in which the *śarkarākalka* is preserved.[38] The amount of the *svaccha* variety of *bandha* or medium to be used in the *cikkaṇa* is six, five or four sixteenth part of the amount of *cikkaṇa(?)*.[39]

In the next stage, i.e. when the coating of *cikkaṇa* has dried, one should apply three successive coatings[40] (*tribhaktyā*) of *śvetavarṇa*, a variety of white colour adding *bandha* or gum to it, amounting to one tenth less than the amount of the same used in the *cikkaṇa*, or else one may add the same amount.[41]

[36] K.Ś., p. 259 verse 18b.

[37] The relevant hemistich which is missing in the printed version of the K.Ś. (p. 255, verse 16b), is found in the MS and reads as follows:

paścādvai cikkaṇaṃ lipya śvetavarṇaṃ tato lipet ।

Apart from this there are other references also, for example p. 258, verse 3a and 4b (this is missing in the printed version; in the MS it reads "*lipya cikkaṇalepanam*"). All these references are concerned only with the technique of painting stone and brick images, not with that of clay figures. The above-quoted hemistich is the only reference concerned with clay images as can also be deduced from another statement (p. 258, verse 6a).

[38] K.Ś., p. 259, verse 19. The same reads in the MS as follows:

cikkaṇaṃ kalkasāraṃ syāt tadvidhaṃ cikkaṇaṃ bhavet ।
jalapāte sudhādhārāpāte śarkarādravat ॥

Obviously the readings in print are better and if we amend the reading *jalapātra* (of the printed version) to *jalamātra*, then we get the meaning that the *cikkaṇa* has two varieties: (1) pure lime water and (2) the water of the *śarkarākalka*.

It may be mentioned incidentally that this verse proves that in ancient times *sudhā* (stucco) and *śarkarākalka* were considered two different materials, although both are prepared from lime-stone itself.

The word *cikkaṇa* is often used in the sense of "glazed", or "having a glazed surface". The purpose of coating *cikkaṇa* is to give the image a glazed surface. In view of this, the question arises whether the word *cikkaṇa* originally meant the *śarkarāsāra* and lime-water, the effect produced by this water has later been also called by the same name, or whether it originally meant "glazing" or "a glazed object", the water which gives that effect has later been also called *cikkaṇa*. This question concerns the history of the word and it is for linguists to decide the matter.

[39] K.Ś., p. 259, verses 17b-18. In print as well as in the MS the statement: "*kalkaṃ ṣoḍaśadhā bhajya*" is found, but how the *kalka* comes into the picture is not clear. The metre does not permit the amendment of *kalka* to *cikkaṇa*, so we have placed a question mark in our text after the word *cikkaṇa*. Even if one adds only four sixteenth of *bandha* to the *cikkaṇa*, which is the smallest amount suggested, it still seems too much. This is an important point, because one has to use the *bandha* in other materials in relation to this measurement. So it needs verifying, but at present we have no way of doing so.

According to Ś.R. a coating of the decoction of three myrobalans (*triphala*, viz. fruits of Terminalia chebula, Terminalia Bellerica and Phylanthus Emblica) should be given after the work with *śarkarākalka* is finished (see p. 93, verse 32b). We have noted elsewhere that the passage in this text dealing with *śarkarākalka* is defective. As it does not give the instruction found in the K.Ś., according to which *śarkarākalka* is prepared with the *triphala* decoction also, it might be possible that these sentences are misplaced in the Ś.R. However, at the moment it is difficult to decide this matter definitely.

[40] K.Ś., p. 258, verse 9b.

[41] Ibid., p. 259, verses 20b-21. The same verses read in the MS as follows:

cikkaṇārhakabandhaṃ (dhe?) daśabhāgavibhājite ।
ekāṃśarahitaṃ bandhaṃ sata-(sita, śveta?) lepanayogyakam ॥
cikkaṇe bandhakūlaṃ vā sitalepanakarmaṇi ।

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

Then one should apply three coatings of *pāṇḍuvarṇa*, another variety of white colour. To this one may add the same amount of *bandha* as is used in *śvetavarṇa*, or one may make it one tenth less than that.[42]

With these six coatings of the two varieties of white colour the preparation of the ground is completed. Here two questions arise: the first is concerned with the materials with which the *śveta* and *pāṇḍu* varieties of white are prepared, and the second with the purpose of using two varieties of white paint. It seems that by *śveta* or *sita* the powder or paste made of conch shell (*śaṅkhacūrṇa*) is meant.[43] The text seems to explain the purpose of using two varieties of white and the nature of the *pāṇḍu* variety of white.[44] But this passage, as available now, is unintelligible and so these points have to be left undecided.

Now each of the desired colours (*bimbasvabhāvavarṇa*) should be applied in six coatings.[45] Each coating is given in a particular way, i.e. by moving the brush in a certain manner, so the ways or modes of applying the colours are six in all, namely (1) *patra*, (2) *hīra*, (3) *bindu*, (4) *sūpa*, (5) *udvartana* and (6) *pravarta*.[46] If the colour is applied perpendicularly, i.e. by

[42] K.Ś., p. 259, verse 22. The same is read in the MS as follows:

sitabandhasamaṃ vātha ... tadvihīnakam ।
pāṇḍuvarṇasya bandhaṃ syāt triḥkṛtvā pāṇḍulepanam ॥

See also p. 258, verses 10–11. In the corresponding place the Ś.R. (p. 93, verse 33a) gives an instruction to use *svarṇapiṣṭa*, i.e. usually gold paste, but it is not clear what is meant by this. Moreover, it is doubtful whether this statement is at all correct.

[43] K.Ś., p. 256, verse 20b. The MS reads: "*tatsudhākarmaraktaṃ syāt śaṅkhadaṇḍaṃ sitaṃ bhavet*". Here *śaṅkhadaṇḍa* seems an incorrect reading and it might have been *śaṅkhacūrṇa*. It should be pointed out that in the Indian technique of painting *śaṅkhacūrṇa* is often recommended for preparing the ground.

The other texts (see V.A.K., M. edn., p. 90; T. edn., p. 46; K.J.K., p. 68 and S.A.A., p. 77) prescribe *mauktikamṛt* in this place, but none of them clarifies what is meant by it. Literally this word means the mud of pearls, but it is out of the question to use such a costly material for grounding. Whether it means the lime made out of the pearl-shells or simply white earth, is a question which cannot now be decided.

[44] K.Ś., p. 258, verses 10–11a.

[45] Ibid., p. 259, verse 23. The MS reads as follows:

ṣaḍvarṇaṃ tu tato lipya krameṇaiva tu deśikaḥ ।
bimbasvabhāvavarṇaṃ tu ṣaṭkṛtvā tu samālipet ॥

In the following verses the MS reads instead of *ṣaḍvarṇa* first as *ṣaḍvarga* and for the second time as *maṇḍa*. Which of these three words is correct cannot be finally decided now. In fact, the subject that should be dealt with in this context is not colours but the ways of applying them. So *varga* may be the proper word here. In spite of our preference for *varga*, we have not tried to amend *varṇa* because it is found in many places in the MS. Only the K.J.K. (p. 69) says that one must apply colours from top to bottom.

[46] K.Ś., p. 259, from verse 27 onwards. Some parts are missing in the printed version but are found in the MS, in which the whole passage concerned with this topic runs as follows:

patrahīraṃ ca binduṃ ca sūpamudvartanaṃ tathā ।
pravartaṃ ca ṣaḍaitāni varṇaṃ lepanakaṃ viduḥ ॥
dīrghaṃ patramiti khyātaṃ rahitaṃ vai tiryaggatam ।
sarṣapāstaraṇaṃ yadvat tadvadbindumudāhṛtam ॥
sūkṣmabindustu dhūpaṃ syāt tasmādvai sūkṣmabindu vā ।
tadurvaktranamākyātaṃ tatoccaṃ tadvibhājitam ॥

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

moving the brush up and down, then it is called the *patra* variety of (*varṇalepana*) colour-coating. If the colour is horizontally applied, i.e. by moving the brush from left to right and *vice versa*, then it is called *hīra*. If the colour is applied in points in which case the surface looks as if covered with mustard seeds (*sarṣapāstaraṇa*), then it is called *bindu*. *Sūpa* is the same as *bindu* with this difference that the colour is applied in smaller dots. If the colour is applied in still smaller points it is called *udvartana*, and lastly, if the colour is applied along with *svarṇacūrṇa* (gold dust or colours prepared from precious stones?[47]) it is called *pravartaka*.

One must use different amounts of *bandha* or binding medium in the colours, depending on for which coating the colours are meant. The amount that should be added to the colours meant for the first coating should be one twentieth less than the amount added to the *pāṇḍuvarṇa* (i.e. the second variety of white colour used for preparing the ground). The amount of binding medium that should be added to the colours meant for the second coating should be one twentieth less than the amount added to the colours meant for the first coating. In this way the amount of binding medium is always one twentieth less in the colours meant for successive coatings.[48]

sūkṣmacūrṇasamāyuktaṃ varṇalepaṃ pravartakam ।
ṣaḍvarṇakramamevaṃ hi lepayettu parasparam ॥

In this passage many readings are doubtful and at present we have no means of correcting them. We have, however, tried to explain the meaning as far as possible.

For the same reason (i.e. that the six manners of applying colours are not as clear from this defective passage as they should be) it is difficult to investigate whether or not there is any explanation for naming each of these six methods in the given way. It is interesting to note, however, that the first three names correspond to the names of three *vartanās* as treated in the V.D.P. (p. 334) in connection with painting. *Vartanā* and its varieties are explained in different ways (Kramrisch, V.D., 46 ff; Gunasinghe, T.P.I., pp. 63-78; and Varma, I.H.Q., 6 ff.).

[47] According to the passage in the MS quoted in the previous note the reading here is *sūkṣmacūrṇa*, while it is *svarṇacūrṇa* according to the printed version. The latter seems reliable, but what is meant by *svarṇacūrṇa* is difficult to say. A similar phrase: *suvarṇārhakavarṇe* occurs in another context (in the printed version it is corrupt, p. 256, verse 19a). Although this phrase is found at the beginning of a chapter (according to the MS) or of a topic (according to the printed version) dealing with mixed colours, it is evidently not concerned with mixed colours. From the present context it seems that the colours prepared out of precious stones and similar costly objects are called *suvarṇa*, meaning "good" or "brilliant" colour. Even if this is true, it is still difficult to consider *suvarṇa* as synonymous with *svarṇa*. Of course, the two are synonymous when meaning "gold" but not when *suvarṇa* means "brilliant colour". We cannot, therefore, take *svarṇacūrṇa* of the present context in the sense of brilliant colour, nor can we, owing to the metre, easily amend it to *suvarṇacūrṇa*. This being so, we must take it to mean "gold dust." Similar prescriptions are found in other texts (V.A.K., M. edn., p. 91; T. edn., p. 47 and S.A.A., p. 77) and accordingly such a meaning would fit the present context. The V.A.K. (M. edn., p. 91; T. edn., p. 47) specifically prescribes the mixing of gold into the colours which are to be used for the final coating, so that, as the text says, the effect of the image would be heightened (*śaktiyutaṃ bhavati*). But in the case of the K.Ś. difficulty arises in either sense (viz. brilliant colour or gold dust) because this context is meant for describing the method by which the colours are applied and not how they are prepared or what sort of colours should or should not be mixed and so on. Therefore this point needs further investigation.

[48] K.Ś., p. 259, verses 24-5. The same verses in the MS read as follows.:

pāṇḍubandhaṃ tu viṃśāṃśe tvaṃśahīnaṃ tu yajjalam ।
ṣaḍvargeṣvādivarṇasya bandhamityumadāyatāḥ ॥

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

As the text itself explicitly mentions,[49] a notable point here is that the lower the coating, the greater the amount of *bandha* or binding medium. This is indeed a matter of technical significance, for if the colours of underlying coatings contained less binding medium than those of upper layers, the former would tend to loosen slowly and consequently all colours might come off in course of a short time. The method as prescribed here is quite safe. From time to time as we have observed before, this principle is maintained in the case of other materials also, such as clay and lime-stone-paste.

This is all that we can learn at present about the method of applying colours from the *kāśyapaśilpa* which is the best of known sources of this subject. As colour is the last item to be applied to a clay image, our description of the entire process of building up such a figure is herewith concluded.

tadādivarṇabandhaṃ tu viṃśāṃśenavihīnakam l
dvitīyavarṇabandhaṃ syāt tadvadbandhanakaṃ tathā ll

[49] K.Ś., p. 259, verse 26a. The MS reads as follows:

ṣaṇṇāmapi maṇḍānāṃ bandhamevaṃ kramaśonnatam l

Here the word *krama* should be taken as referring to descending, not ascending order

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

Chapter XII

THE TECHNIQUE OF POLYCHROMY ON IMAGES MADE OF VARIOUS MATERIALS

THE IMPORTANCE OF POLYCHROMY

Polychromy was, especially in the earlier periods, extensively practised in India on sculptures made of various materials. But in view of the fact that ancient examples of polychromes are now rare on account of loss through various causes, it is mainly through other evidence that we can reach this conclusion. Apart from the fact that it was widely practised, it led, in its turn, to certain developments in the sphere of statuary, such as the increase in number of the images of the same God that are employed for worship in temples, the rite of eye-opening (or *akṣimocana*) carried out on such sculptures when they are consecrated, and the designation of a three-dimensional image as *citra* (usually meaning painting), a designation which eventually gave rise to the classification of art objects, viz. sculpture in the round, relief and painting, as *citra*, *ardhacitra* and *citrābhāsa* respectively.

If we turn from the rôle played by polychromy and consider its development, we see that clay, occupying a better position in the hierarchical order of the various sculptural media, appears to be the medium mainly responsible for the development of polychromy, though wood also seems to be closely associated with this process. In early times polychromy was undoubtedly practised on all sculptural media, except bronze or metal. But in later times the situation changed and this change differed from case to case in the following way. When it was not possible to colour the entire stone image, only certain parts were painted such as the eyes, eyebrows, lips, palms of the hands, soles of the feet, nails of fingers and toes, ornaments such as crowns, etc. In the next stage polychromy was made optional and still later it was even abandoned. Such changes are found in the case of all the materials except clay. This development seems to have taken place prior to the 8th century A.D., for it can be traced from certain statements in the *Vimānārcanākalpa*. Polychromy was and still is concomitant with clay, as we saw in the first chapter in which we explained that colour is part of the very concept of a clay image; and the same will also be obvious from some of the items to be discussed in the following pages.

On grounds other than technical we observed above that polychromy developed mainly with clay, a fact which indicates that polychromy is a matter of adoption in the case of media like stone, etc.[1] Perhaps the same conclusion can be reached when the methods of

[1] The matters explained until now in this chapter were discussed in greater detail on the basis of the same *Āgama* texts and with the necessary references in the author's article: *The Rôle of Polychromy in Indian Statuary*, see A.A., Vol. XXIV, No. 2, pp. 117-132. This article is actually a by-product of the present work.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

As the text itself explicitly mentions,[49] a notable point here is that the lower the coating, the greater the amount of *bandha* or binding medium. This is indeed a matter of technical significance, for if the colours of underlying coatings contained less binding medium than those of upper layers, the former would tend to loosen slowly and consequently all colours might come off in course of a short time. The method as prescribed here is quite safe. From time to time as we have observed before, this principle is maintained in the case of other materials also, such as clay and lime-stone-paste.

This is all that we can learn at present about the method of applying colours from the *kāśyapaśilpa* which is the best of known sources of this subject. As colour is the last item to be applied to a clay image, our description of the entire process of building up such a figure is herewith concluded.

tadādivarṇabandhaṃ tu viṃśāṃśenavihīnakam l
dvitīyavarṇabandhaṃ syāt tadvadbandhanakaṃ tathā ll

[49] K.Ś., p. 259, verse 26a. The MS reads as follows:

ṣaṇṇāmapi maṇḍānāṃ bandhamevaṃ kramaśonnatam l

Here the word *krama* should be taken as referring to descending, not ascending order

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

Chapter XII

THE TECHNIQUE OF POLYCHROMY ON IMAGES MADE OF VARIOUS MATERIALS

THE IMPORTANCE OF POLYCHROMY

Polychromy was, especially in the earlier periods, extensively practised in India on sculptures made of various materials. But in view of the fact that ancient examples of polychromes are now rare on account of loss through various causes, it is mainly through other evidence that we can reach this conclusion. Apart from the fact that it was widely practised, it led, in its turn, to certain developments in the sphere of statuary, such as the increase in number of the images of the same God that are employed for worship in temples, the rite of eye-opening (or *akṣimocana*) carried out on such sculptures when they are consecrated, and the designation of a three-dimensional image as *citra* (usually meaning painting), a designation which eventually gave rise to the classification of art objects, viz. sculpture in the round, relief and painting, as *citra*, *ardhacitra* and *citrābhāsa* respectively.

If we turn from the rôle played by polychromy and consider its development, we see that clay, occupying a better position in the hierarchical order of the various sculptural media, appears to be the medium mainly responsible for the development of polychromy, though wood also seems to be closely associated with this process. In early times polychromy was undoubtedly practised on all sculptural media, except bronze or metal. But in later times the situation changed and this change differed from case to case in the following way. When it was not possible to colour the entire stone image, only certain parts were painted such as the eyes, eyebrows, lips, palms of the hands, soles of the feet, nails of fingers and toes, ornaments such as crowns, etc. In the next stage polychromy was made optional and still later it was even abandoned. Such changes are found in the case of all the materials except clay. This development seems to have taken place prior to the 8th century A.D., for it can be traced from certain statements in the *Vimānārcanākalpa*. Polychromy was and still is concomitant with clay, as we saw in the first chapter in which we explained that colour is part of the very concept of a clay image; and the same will also be obvious from some of the items to be discussed in the following pages.

On grounds other than technical we observed above that polychromy developed mainly with clay, a fact which indicates that polychromy is a matter of adoption in the case of media like stone, etc.[1] Perhaps the same conclusion can be reached when the methods of

[1] The matters explained until now in this chapter were discussed in greater detail on the basis of the same *Āgama* texts and with the necessary references in the author's article: *The Rôle of Polychromy in Indian Statuary*, see A.A., Vol. XXIV, No. 2, pp. 117-132. This article is actually a by-product of the present work.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

polychromy on materials other than clay are explained, for these do not differ fundamentally from the methods followed in the case of a clay image. For all these reasons it seems worthwhile to explain them. Moreover, such an explanation may eventually help future investigations which may be conducted on the basis of traces of polychromy found in some of the art centres.

THE CLASSIFICATION OF POLYCHROMATIC IMAGES

At the outset it must be pointed out that the *Āgama* texts describe the technique of polychromy also in connection with images meant for temple worship. Among such images none is to be coloured except the main deity or *Dhruvabera* (*Dhruvārcābera* should not, however, be misunderstood to be identical with this). In view of this any classification of polychromes found in these texts should be understood to be based on the materials prescribed for making a *Dhruvabera*. With regard to the technical process of polychromy the texts agree in the essential points; yet the Śaiva- and Vaikhānasa- Āgamas differ in the very classification of polychromes. Hence this should be discussed first.

According to the *Kāśyapaśilpa*, which belongs to the Śaiva sect, there are three kinds of polychromatic images, viz. *śilā-garbha*, *iṣṭakā-garbha* and *dāru-garbha*.[2] Of these *śilā-garbha* means painted stone figure and *iṣṭakā-garbha* denotes painted image made of brick-and-stucco. Likewise, *dāru-garbha* should literally mean painted wooden figure, but in fact a clay image is meant by this.[3] As has been noted in the previous chapters clay figure built according to the technique described in this and other texts contains a wooden armature; and from this point of view clay image seems to have been mentioned in this text as *dāru-garbha*. In spite of this such a designation seems very curious.

In the texts of the Vaikhānasa sect, particularly in the *Samūrtārcanādhikaraṇa*,[4] the classification is made somewhat differently, viz. *śaila*, *mṛṇmaya* and *dārava*, which mean image made of stone, clay and wood respectively.

[2] K.Ś., p. 257, verse 1. In the MS the second half of this verse reads: "*śailadāṣaṣṭikāgarbham tridhā vai varṇalepanam*". In one place this too is incorrect and, on the basis of the matter following in the original, it can be corrected to: *śailadārviṣṭakāgarbham*, etc.

What is mentioned in this verse as *varṇalepana* literally means the painting of colours, but in the context a polychromatic image is meant. While the same reading is repeated in the printed version (p. 258, verse 8), in the MS the reading *varṇagarbha* is found in the same sense. However, grammatically speaking neither of these usages convey the desired meaning, so further investigation regarding this matter is required.

[3] K.Ś., p. 258, verse 6a. As in the printed version this hemistich reads in the MS: "*śūlasthāpanakarmādi dārugarbham tu pūrvavat*". Here *dārugarbha* gives no correct meaning, so it should be amended to *dārugarbhe*. If this hemistich is originally read at all here with these words, it leaves no room for any doubt that a clay image is meant.

[4] S.A.A., p. 77, verses 8b-9a, this matter is repeated in a different context, p. 88, verses 11b-12a. In the passage describing the pasting of cloth on the clay image the V.A.K. states (M. edn., pp. 89-90; T. edn., p. 46), viz. "*bere śaile dārave ca*". From this it is clear that, according to this text also, the classification should be made in the same way.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

Thus these two accounts vary in three points. First, they name the polychromatic images differently. The terms *śaila, mṛṇmaya* and *dārava*, as adopted by the *Samūrtārcanādhikaraṇa*, can indicate polychromy only in a given context, not independently, for these terms are formed out of the names of the said materials. On the other hand, the terms as found in the *Kāśyapaśilpa*, do not depend on the context to convey such a meaning.[5] It goes without saying that the latter designation is better and so we shall adopt it throughout this work.

The second point of difference is that the *Kāśyapaśilpa* designates the painted clay image as *dāru-garbha*. Whatever the reasons for such a designation, it is peculiar and undoubtedly defective. The *Samūrtārcanādhikaraṇa*, however, calls it *mṛṇmaya*, which is correct. Apart from this, the latter text enumerates the wooden image (*dārava*) separately.

The last and third point of difference is perhaps more significant. The *Kāśyapaśilpa* includes the brick-and-stucco image (*iṣṭakā-garbha*) in the list of polychromatic figures, while the *Samūrtārcanādhikaraṇa* excludes it altogether. How does this difference occur? At the moment it is rather difficult to give a definite and well-founded answer to this question. Nevertheless one could make the following conjecture.

Gopinatha Rao states that in the *sancta sanctorum* of some of the South Indian temples, as of Śrīraṅgam and Trivandram, the main deities or *Dhruvaberas* were made of stucco.[6] One can presume that these images were actually made of brick and stucco. If so, these examples may prove that in Vaiṣṇava temples too, brick and stucco were together employed for the construction of *Dhruvaberas*, as both of these are famous Vaiṣṇava centres, the former being more so. This matter, however, requires some scrutiny, since, as we have already seen, Rao seems to have failed to note the precise nature of certain materials. With regard to existing examples of *iṣṭakā-garbha* in the temples of Vedic tradition, our present knowledge is insufficient to say whether or not the Vaiṣṇava tradition favours these materials. When we turn to the texts we find that the *Samūrtārcanādhikaraṇa* and even the other Vaikhānasa texts utilised here, list brick and stucco together as one of the sculptural media though certainly not in the proper context.[7] Moreover, they do not contain a clear statement about the painting of the images made in this medium. So it may be assumed that in

[5] In the terms *śilā-, iṣṭakā-* and *dāru-garbha* there is also no part meaning literally coloured, but the word *garbha* implies this meaning for the simple reason that these names are compounded with it. If this were not the case, there could not have been any purpose in forming the compound words in *bahuvrīhi*.

[6] E.H.I., Vol. I, Pt. 1, p. 49.

[7] In one place the V.A.K. (M. edn., p. 268; T. edn., p. 142) mentions stucco and brick as separate and independent media. An image could be made in stucco alone, but how it could be made purely in brick is not clear. Perhaps the text mentions brick as a medium in view of the practice of binding the bricks with mud mortar. It is unlikely that terracotta is meant here, for it is generally termed as *pakvamṛṇmaya-pratimā* or simply *pakvam* in the sense of *pakvaṃ bimbam*, but not *aiṣṭakam* meaning "of brick". Warning against carelessness eventually leading to certain mistakes in shaping images, the S.A.A. (p. 378, verse 58a) states that one should not make an image of either pure stucco or brick. From this one can infer that these two materials are known to this

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

general the combined media of brick and stucco as material for images of worship in temples do not find much favour with the Vaiṣṇava tradition.

It is generally believed that South Indian village goddesses belong to a tradition entirely different from that of the Brahmanical or Vedic religion. This may be true in origin but they too, are not without influence from the latter tradition, as is clear from some of their names, such as for example Mahākālī, Durgā, etc. Moreover, these goddesses carry many Śaiva emblems. One speciality of their images is that even today they are mostly made of brick and stucco together and coloured brilliantly. The particular Śaiva sect to which the *Kāśyapaśilpa* belongs is of the Vedic tradition. Even so, it is not surprising if this tradition takes into consideration specialities of the tradition to which the village goddesses belong, because of the latter's affinity to it. If this can be taken for granted, one can understand why brick-and-stucco found favour with the Śaiva sect to which the *Kāśyapaśilpa* belongs and why it includes brick-and-stucco image in the classification of polychromatic figures whereas the texts of the Vaiṣṇava or Vaikhānasa sect do not.

These differences with regard to the classification of polychromatic images as found in the two accounts, are significant from the point of view of religious history. Leaving aside these textual differences based on religion, we find four kinds of polychromatic figures mentioned in our sources; if we adopt the mode of the *Kāśyapaśilpa*, we may call them as *mṛṇmaya-garbha* or better *mṛd-garbha* (painted clay image), *śilā-garbha* (painted stone image), *dāru-garbha* (painted wooden image) and *iṣṭakā-garbha* (painted brick-and-stucco image). From these very names it is clear that this classification is based on the materials out of which images are made with all details.[8] It is interesting to note from both of these different accounts

text as separate and independent media. However, as the word *eva* (*sudhayaiva* and *iṣṭakayaiva*) is twice used in this statement, we may also deduce that, according to this text, it is permissible to utilise these two materials together, in which case it would not be held defective. The V.A.K., too, states that it would be wrong to make a *Dhruvabera* with brick without stucco ("*iṣṭakā-kalpitaṃ dhruvaberaṃ sudhayāyuktam* [*sudhayā'yuktam?*] M. edn., p. 399; T. edn., p. 214), which obviously means that it is permissible to utilise both of them together for making a *Dhruvabera*.

The statements referred to above are found elsewhere, i.e. mostly in the *prāyaścittaprakaraṇa*, but not in the proper context, where the materials for making images of worship are enlisted or recommended [for this topic, see V.A.K., M. edn., pp. 69, 148 (and p. 448 may also be seen); T. edn., pp. 35 and 75 and S.A.A., pp. 43 and 102]. From all this it is obvious that, although the Vaiṣṇava tradition counts brick-and-stucco among sculptural media, it does not favour it.

[8] Since this classification is itself based on the materials out of which images are made, it presupposes, at least so one expects, the existence in Sanskrit of a common term for polychromatic images, irrespective of their media. In the Vaikhānasa texts which have been utilised by us no such term can be traced. As has been mentioned in note No. 2 of this chapter, two terms — *varṇalepana* and *varṇagarbha* — are found in the K.Ś., but in their present form these cannot be used, at least not for the moment. In our article referred to in note 1 of this chapter we have concluded that the word *citra* might have stood for polychrome in quite an early period, and the same can be noted from Patañjali's use of this word in a place (a matter which will be touched upon again in the body of this work). But in later times, as the *Āgama* texts allow us to understand, this connotation of the word *citra* changed to merely an image in the round, without specific reference to polychromy. So one has to wait till the discovery of the use of such a word in later times.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

bronze (*tāmra*) is omitted, though it is one of the four suitable materials for making a *Dhruvabera*. The omission clearly indicates that polychromy on bronze was not in favour, though it was not in any way prohibited literally. This exclusion can probably be taken to apply to metal as a whole. In fact, ancient polychromatic metal images have not been found anywhere in India, so far we know.

In the technique of polychromy on images of various media certain materials are needed such as *śarkarākalka*, cloth, *cikkaṇa*, white colour for grounding, colours and finally *bandha* or binding medium, to be used with all these substances. The account of the technique as given in the texts in the contexts concerned describes only the order in which these substances are utilised, not the other details, for these are the same as discussed in the previous chapters in connection with clay images.

THE TECHNIQUE OF POLYCHROMY ON A MRD-GARBHA

As has been noted, the clay image (i.e. *dāru-garbha* according to the K.Ś.) must be coloured, for in this case there is no alternative method. The process of making the ground, as well as colouring the clay figure has already been explained in the previous chapter, so we need not elaborate this subject any further.

THE TECHNIQUE OF POLYCHROMY ON A SILA-GARBHA

With regard to the explanation of polychromy on stone images the texts differ, though merely in minor points; hence they are mentioned only in the foot-notes. So the following account is based on several texts.

There are three alternative methods of polychromy on a *śilā-garbha*. One must finish a stone image with all its details in the same way as it would be done if there were no intention of colouring it. While doing so one must subtract[9] one *yava* from the prescribed measurements of the surface of the entire figure in order to make room for the materials which should be applied to colour it, so that the prescribed measurements are not exceeded in the final stage. On such a well-finished stone image *śarkarākalka*[10] should be applied in a thickness of one *yava*. In this work the original details should be carefully maintained.

[9] This clear statement is only found in the S.A.A. (p. 76, verse 1, for an almost similar topic p. 180, verses 49-50 may also be consulted) and the K.J.K. (p. 58). It is, however, implied in a statement of the K.Ś., to which attention will be drawn in note 17 of this chapter.

[10] In the V.A.K. (M. edn., p. 268; T. edn., p. 142, in the latter many sentences are missing) a curious passage occurs, though in a different context. According to this passage one should add two, two and a half or three times the amount of sand to the *śarkarākalka* and then apply it to the stone image when one wants to colour. Although we doubt the reliability of this passage, it is better to investigate the matter before drawing a definite conclusion.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

On this coating the cloth should be pasted over the entire figure,[11] or else one may proceed the other way round, i.e. one may first paste the cloth and then apply the *śarkarākalka*.[12] If the former of these methods is adopted an extremely thin coating of *śarkarākalka* is given onto the cloth.[13] Then *cikkaṇa*[14] is coated once and white is applied,[15] after which the details of drapery, ornaments, etc. should again be worked out.[16] Finally the desired colours are painted.

The second method of polychromy on a *śilā-garbha* does not differ from the first except in that the cloth is not pasted at all.[17] In the third method neither *śarkarākalka* nor cloth is used. Only the white colour is directly applied to the stone, to prepare the ground and then the desired colours are painted. In this case one should, while finishing the image in stone, reduce the prescribed measurements of the entire surface of the image by the thickness of one sesame seed, not by one *yava*, as is the case in the two methods described above.[18]

[11] S.A.A., pp. 76-77, verses 1-9.

[12] This is the sequence according to the K.Ś., p. 258, verses 2-3. In the MS these verses run as follows:

śailaje varṇapakṣyā vai aṅgopāṅgaṃ śilāmayam l
upariṣṭāt paṭācchādya tasyordhve śarkaraṃ lipet ll
tadūrdhve cikkaṇaṃ lipya śvetavarṇādayas tataḥ l
bimbocitanibhaṃ lipya pratiṣṭhāṃ samyagācaret ll

[13] This specification is found only in the S.A.A. (p. 77, verses 9b-10). As is obvious from the passage quoted in the previous note, it is not found in the K.Ś. in connection with a stone image, though it prescribes this method in the case of a clay figure (see chapter XI under the subtitle, "The Method of Pasting the Cloth"), because according to this text in the case of a stone image lime-stone-paste is applied on top of the cloth.

[14] The prescription of *cikkaṇa* is found only in the K.Ś. It is unknown to the S.A.A. or any other texts used by us.

[15] According to the S.A.A. the coating of lime-stone-paste and white paint together should measure only the thickness of one sesame seed. In connection with the clay image the K.Ś., however, specifies the thickness of the coating of lime-stone-paste on the cloth without the white paint (references are as indicated in note 13 of this chapter).

[16] This statement, too, is found only in the S.A.A. (p. 77, verse 11). Although this is not specified in the K.Ś. with respect to the stone image, it is found in connection with the clay figure (see chapter XI under the subtitle, "The Method of Pasting the Cloth").

[17] S.A.A., p. 77, verses 13b-14a; K.Ś., p. 258, verses 4-5a. These read in the MS thus:

athavā śailaje bimbe paṭācchādyaṃ vinordhvataḥ l
śarkarāṃ yavamānaṃ tu lipya cikkaṇalepanam ll
śvetaṃ ca bimbavarṇaṃ ca krameṇaivocitaṃ lipet l

Although there is no specification in this text that one should reduce the prescribed thickness over the entire surface of the image by the thickness of one *yava*, it is nevertheless implied from a part of the above-quoted passage, viz. "*śarkarāṃ yavamānam tu*". Such an implication may also be taken for granted in the first method, in connection with which the text says that *śarkarākalka* should be applied in a thickness of one *yava*, yet it does not specify that one should subtract this measurement from the entire figure (see note 9 of this chapter).

[18] This third method is not mentioned at all in the K.Ś. and is found only in the S.A.A., p. 77, verses 14b-15. Here it is not, of course, literally stated that in the third method *śarkarākalka* also is not applied. This is the only way of differentiating the third method from the second and so this matter is implied.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

TECHNIQUE OF POLYCHROMY ON IMAGES OF VARIOUS MEDIA

THE TECHNIQUE OF POLYCHROMY ON A DARU-GARBHA

Like a stone image a *dāru-garbha* too is first made with full details and then coloured. The technique of polychromy of a wooden figure is exactly the same as that of a *śilā-garbha*. Thus it can be painted by three methods.[19]

THE TECHNIQUE OF POLYCHROMY ON AN ISTAKA-GARBHA

Iṣṭakā-garbha literally means a coloured image made of brick, but according to the textual specifications it should be made of burnt brick and stucco together. As such, this may simply be called stucco, according to modern usage. A great number of stucco figures were unearthed from the areas where the Gandhāra and Indo-Afghan schools of art flourished, and in these examples the use of brick is not found. In order to suggest this contrast of historical importance, it seems better to translate *iṣṭakā-garbha* as brick-and-stucco image, though such a designation is not familiar in English. Moreover, by doing so, the textual specification of materials can be maintained.

With these two materials—burnt brick and stucco—the image is made with full details of all its features and then the cloth is pasted on it. Onto the cloth *śarkarākalka* is applied, on which a coating of *cikkaṇa* is given. Then the white is coated and finally the desired colours are painted. This is one method. In the second method no cloth is pasted, but the rest of the process is the same as in the first method.[20]

Having described the technique of polychromy on an *iṣṭakā-garbha*, we must now stress the following point. If *śarkarākalka* and stucco (*sudhā*) were identical, there could not have been any necessity of using both on *iṣṭakā-garbha*. The fact that they are not identical is also clear from another matter. One of our texts states:[21] 'One should make an umbrella with white cloth for use in the temples. When the cloth is fixed to the frame of the

[19] S.A.A., p. 77, verses 16-17.

[20] K.Ś., p. 258, verses 6b-8a. In the MS these run as follows:

citraṃ vāpy ardhacitraṃ vā pakveṣṭakāsudhānvitam ll
aṅgaṃ sampūrṇakaṃ kṛtvā paṭamācchādayet tataḥ l
śarkarādīni sarvāṇi śailaje tu yathā tathā ll
kartavyaṃ iṣṭakāgarbha dārumiśritameva vā l

According to the fourth hemistich quoted here an *iṣṭakāgarbha* can also be made in conjunction with timber. The question arises whether this means that timber, instead of brick, can be used with stucco. If this is the case, it is not clear how such a figure can be called an *iṣṭakāgarbha*. On the other hand it is equally difficult to understand how brick and timber can be employed together. This matter obviously needs further investigation, and this subject is, therefore, not discussed in the body of our text.

It may be pointed out here that the K.Ś. prescribes only two methods for a *śilā-garbha*, and the same must be the case for an *iṣṭakā-garbha*, for it says: "*śailaje tu yathā tathā*". We have specified this accordingly in the body of our work.

[21] V.A.K., M. edn., p. 187; T. edn., p. 96.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

umbrella, it should be given a thin coating of *śarkarākalka*'. From this it is clear that *śarkarākalka* was in use not only for polychromy, but also for other purposes. Had *śarkarākalka* been stucco, then it would be meaningless to apply it to an umbrella. It is, therefore, impossible to designate as stuccos all those images, including clay figures, in which *śarkarākalka* is employed. For the same reason Gopinatha Rao is not correct when he explains *ghaṭiśarkarā* (or "*kaḍiśarkarā*" as he puts it) as lime or "mortar".[22] This misunderstanding seems to have led him to state that "in the earlier and mediaeval times *dhruva-beras* used to be covered with a thin coat of stucco, which was painted afterwards with the colour appropriate to each god".[23] We cannot generalize this matter in such a way and moreover, it is certain that we cannot make this statement on the basis of the texts because, as we have seen, not stucco but *śarkarākalka* is used to prepare the ground for painting images made of various materials. In this connection one should, however, take note of the fact that the sculptures executed on the outer surfaces of certain temples, for instance, those of Khajurāho, seem to have been painted, as can be deduced from the patches of the thick layer or layers of some white substance, which has been obviously coated to prepare the ground for colouring. It is to be investigated what material precisely it is. Even if it is not the *śarkarākalka* and instead if it is the real stucco, this does not alter the situation, for after all those figures are on the outer surfaces of the temple walls which are often unsheltered, whereas the images like *Dhruvabera*, are always in the places protected from the rainfall. Hence it is certain that it is the *śarkarākalka*, but not the stucco, that should be applied on *such* images made of various media, when they are planned to be painted.

RELIEFS AND POLYCHROMY

In view of the prohibition to make *ardhacitra* (relief) in certain materials for the purpose of temple worship, something has to be said about the colouring of reliefs. As has been stated more than once, a *Dhruvabera* should never be made in relief, if it is of clay or of bronze.[24] Hence there is no occasion for the discussion of the colouring of a relief in clay. Bronze or metal images as such are always omitted from the list of figures that could be coloured. So the question of painting a bronze relief does not arise at all. A *Dhruvabera* can be made in relief, either in stone or in wood[25] or else in brick-and-stucco;[26] and these three can all be coloured.

[22] E.H.I., Vol. I, Pt. 1, p. 49.

[23] Ibid., pp. 52-53. See also note 2 of chapter V of this work.

[24] V.A.K., M. edn., pp. 70-71 and 398 (at the latter place readings are incorrect); T. edn., pp. 36 and 214; S.A.A., pp. 81, 82 and 375.

[25] V.A.K., M. edn., pp. 71, 398 and 448; T. edn., pp. 36 and 214. There is a clear statement in S.A.A. (p. 76, verse 5) prescribing the colouring of stone relief and from another statement (p. 77, verse 16) the same is probably implied in the case of wooden relief.

[26] As this medium has been listed in the K.Ś. only, we can expect a statement related to it in this text only. See

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

LACQUER WORK

In one of the texts there is a reference to lacquer work. This technique is not, however, dealt with in all details. One point related to polychromy as such is worth noting here. The text says that some of the objects required in temples, including the eight auspicious symbols (*aṣṭamaṅgalas*), should be made of wood or clay. These objects should be coloured by coating them with lacquer.[27]

THE METHODS OF REPAIRING COLOURED IMAGES

Apart from describing the methods of colouring images made in different materials, the texts also explain the ways of repairing them when the need arises. As this subject falls within the scope of the technique, we shall discuss it here.

By mistake or through ignorance if one applies unsuitable or undesired colour, one must wash it away with water mixed with a certain amount of dried secretion of Feronia Elephantum (*kapitthaniryāsa*) and then clean the area with a piece of fresh cloth (*plotavastra*).[28] After this one should again apply the proper colour or colours.[29] At first sight the prescription of gum water for washing away undesired colours may appear strange. Gum, of course, holds the colour firmly once it is dried, but before it dries it keeps the surface wet longer than pure water. Moreover, it makes the surface softer than pure water. These two effects are obviously favourable for removing colour which has been applied long ago and dried hard. Experience probably taught the ancient artists that this was the most convenient means; hence the texts record the practice.

Further, the texts state that if the colours fade or become *sphuṭita*, i.e. if the colour coatings loosen or show bubbles or cracks, one should find out whether the defect lies only in the colour coatings, or in the underlying white coatings, in the cloth, or else in the *śarkarākalka*. If the defect lies locally in the colours, they should be removed in the way mentioned above and the cleaned areas should be repainted in the same shades and tints. If the defect lies in the white coatings, then one should remove that part of the coating, apply it again and then paint the original colours. Local repairs can be made as far as this stage. So one should

K.Ś., p. 258, verse 6b; the same is found with better readings in the MS which has already been quoted in note 20 of this chapter.

[27] "*. . . yajñoktavṛkṣaiḥ kṛtān mṛdā vā kṛtān dagdhān vā jatunaivālipya tattadvarṇayutān ca kārayet*", K.J.K., p. 139. Normally the word *pakva* is used to indicate terracotta, so a doubt arises whether in this passage the word *dagdhān*, following *mṛdā vā kṛtān*, is used as a synonym of *pakva* or whether it is a wrong reading. It should be noted that it is not contradictory to the prohibition of terracotta images for worship, as these items are not the objects of worship.

[28] It remains to be examined whether *plota* implies just a fresh cloth or a fresh cloth made slightly wet.

[29] S.A.A., p. 376, verses 35-37 and V.A.K., M. edn., p. 399; T. edn., p. 214.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

examine whether these will suffice, or whether such repairs are necessary over the entire figure. One should then carry them out accordingly. However, if the defect lies in the cloth, or under that, then the local repairs should not be made. If the fault is found in the cloth even in a limited area, one should remove it from the entire figure and after repasting it resume the work in the prescribed way. Thus one can make repairs at every stage. In the case of clay or wooden images one can carry out the repairs as far as the wood. If also the wood of a *dāru-garbha* or the wooden *śūlas* of a *mṛd-garbha* are found to be defective, then no repairs should be made. In that case the image should be totally abandoned and an entirely new one should be made. In the case of *śilā-garbha* the necessity for total rejection does not arise.[30]

This is the account of the classification of polychromatic images, the technique of polychromy and the methods of repairing polychromes, as found in the *Āgama* texts. Some points in it are significant not only technically but also historically.

As our discussion was restricted to those materials recommended in the *Āgama* texts for making *Dhruvaberas*, we dealt with only four materials but, in fact, these are the common ones on which polychromy was practised throughout the world. We have no knowledge of polychromy, in its full and real sense, having been practised in India on images made of any other material.[31]

THE DEVELOPMENT OF POLYCHROMY

The tentative view, expressed on other grounds at the beginning of this chapter, that polychromy developed mainly in connection with images of clay and that, in the case of other media, it was a matter of adoption, is perhaps strengthened by the technical account of polychromy on images made of other material. In this respect two items should be especially noted: *śarkarākalka* and cloth.

The most essential or invariable materials for polychromy are the white for ground, the colours and a binding medium to mix with them. But in the above account the *śarkarā-*

[30] Although the general trend is the same, one does not find in the V.A.K. as many details as we have mentioned here (see M. edn., p. 451; in T. edn. these statements are missing), but all of them are found in the S.A.A. (pp. 430–31, verses 1–12). Here too, however, one should note the significance of different usages. If one does not, there is a risk of missing many details.

Since this topic is not discussed in the K.Ś., we are not in a position to explain the ancient methods of repainting the *iṣṭakā-garbha* on the basis of textual evidence. But we know that brick-and-stucco, like wood, may show defects. In such a case there is no other recourse than to reject the image and make a new one. If the defect lies in the *śarkarākalka*, in the cloth or in any other material, one may repair them as in the case of images made of other media.

[31] Traces of paint are found on carved ivory plaques unearthed from Begram in Afghanistan and preserved in the Musée Guimet, Paris and in the Kabul Museum (for details see A.A.I., p. 98). Perhaps these need not be taken as examples of polychromy in its full sense, as colours were used only on a few spots to produce certain effects.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

kalka is also counted as one of them. Is it necessary to use this material in all cases alike? One fourth part of the total thickness between the armature and the final surface of the image should be filled with *śarkarākalka* in the case of clay figure and so all the details or features of the body, including such minute ones as, for example, the eyebrows, eyelids, nostrils and so on, should be modelled in this material. It is true that being smoother than the other clays it provides a suitable surface for polychromy and at the same time being stronger it ensures, when used for the upper layers, greater permanency to the image, by binding or holding the clay lying inside and by protecting this against atmospheric influences. Thus the *śarkarākalka* is essential in the case of clay figures. But other materials are solid in themselves and images made of them do not need this substance. Moreover, as has been noted, all the bodily details or features are worked out in the respective materials themselves and nothing is left to be done in the *śarkarākalka*. Why then it is also prescribed in at least two out of three methods to be adopted to paint images made of materials other than clay? From the functional point of view there is no answer, so this may indicate that the artists accustomed to use *śarkarākalka* for clay figures repeated the methods when they began to colour images made of other media.

In the case of clay figures the cloth gives additional security to keep the joints of the limbs firmly in proper positions. To some extent this may be true in the case of wooden images constructed by way of joining different pieces, but this cannot be said in the case of those worked out of single solid blocks of wood or those made of stone and of brick-and-stucco, for these materials are strong in themselves. Seen from this point of view, it may lead to our assumption. However, the important function of the cloth is to provide a suitable, smooth surface for colouring which may be as necessary for images made of other media as for clay figures. Though for this reason it cannot be taken as equally clear evidence as the *śarkarākalka*, it can serve to some extent as an argument in favour of our assumption.

In this connection another subject may also be touched upon. The use of lime plaster to cover wall surfaces is believed in some circles to have been known in India from the early centuries of the Christian era onwards, though there is an ample evidence indicating this practice to be older for some centuries. However, it was not at all commonly used as a ground for wall-painting. Till the 16th or 17th century, the walls — of whatever material they were built — were invariably covered with mud, though specially prepared for the purpose, as a ground for wall-paintings. The same practice has certainly continued even after that as one of the methods of preparing the ground. The wall-paintings of Ajanta prove that this practice goes back to at least the 1st century B.C. Does this suggest anything? Perhaps it again indicates that the use of colour was originally associated with clay. Thus there are reasons for assuming that polychromy developed mainly in connection with clay and that, in the case of other media, it was a matter of adoption.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

THE AGE OF POLYCHROMY

It is difficult to give a definite answer to the question since when the practice of polychromy has been known in India. According to E.B. Havell ancient sculptures from centres like Bhārhut, Sāñcī, Amarāvatī, etc. were once completely covered with colour and polychromy was practised even in still earlier times, i.e. in the Maurya period (3rd century B.C.).[32] Unfortunately we do not know his grounds for saying so, but if he were right it might have been possible to trace polychromy from that period onwards on the basis of archaeological finds. However, the same conclusion may be reached on literary evidence. Patañjali, belonging to the 2nd century B.C., uses[33] the word *citra* in the sense of a polychromatic puppet meant for use in a puppet show and in the *Therīgāthā*, which is accepted to be prior to Patañjali, say, the 3rd century B.C. (may not necessarily be the Pāli version), there is a clear description of a painted wooden puppet.[34] Whether it is a puppet, i.e. a small figure, or a colossal image is immaterial here. It is sufficient to know from these sources that there was a practice of polychromy in the 3rd century B.C., though there is no possibility of making out what kind of technique was adopted.

If the question is to be decided merely on the basis of extant examples, then our task becomes practically impossible owing to lack of necessary information. Nevertheless, a few items may be mentioned with a warning that any dates mentioned here need not be considered as the starting point of the various practices, since these remarks are based on our study of archaelogical and other related literature, which is perhaps inadequate.

First of all there is the question whether or not brick-and-stucco images (*iṣṭakā-garbha*) and pure stucco figures can be taken to belong to the same category. If they do not belong to the same group then we are not in a position to indicate any datable brick-and-stucco images. We can only state, however, that there are innumerable images in the temples of village goddesses in South India and this technique is still in vogue.

With regard to pure stucco images, i.e. those the cores of which are built with the materials other than brick, say mud etc. and clay figures the earliest known examples are those belonging to the Indo-Afghan school and dating approximately from the 4th century A.D. (for the details, see our work: *Technique of Gandhāran and Indo-Afghan Stucco Images*).

As far as stone images are concerned, the earliest known example to which the present

[32] I.S.P., pp. 93-4 and 109 and H.I.A., p. 38.

[33] V.M.B., Vol. II, p. 36. The word *citra* used in the passage referred to here, is interpreted in various ways. The meaning given here is according to our own interpretation; for details see our articles: *The Art Medium of Śaubhika-s and Its Nature*, in A.S., Vol. XV, Nos. 3-4, pp. 95-109, particularly pp. 101-104 and also *The Rôle of Polychromy in Indian Statuary*, Section IV, A.A., Vol. XXIV, No. 2, pp. 125-28.

[34] T.T.G., p. 161, verse 390. For the date of this work see G.I.L., Vol. II, Pt. 1, pp. 87-89.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

author can refer, belongs to the 4th century A.D. and comes from Buddhagayā.[35] Still earlier sculptures from the Mathurā school are stated to have been coloured, but in these cases the colouring is meant to conceal the surface, as the stone employed here was defective.[36] Many examples from this school are painted with one colour, as such, they are, therefore, actually monochromes rather than polychromes. Any earlier polychromatic images from this school are unknown to us. From our own observation we can say that many technical details described here are found in the sculptures at Ajanta, which can be assigned either to the end of the 5th or beginning of the 6th century A.D. There is an identical inscription on the pedestals of two stone images of slightly over six feet height (including pedestals?) unearthed in the excavations at Sārnāth. Accordingly both the images were executed in the year 157 of the Gupta era, i.e. 476-7 A.D. and the images were painted (*citrita*) vividly,[37] but no trace of colour is reported to have remained. Although this is a century or so later than the Buddhagayā example referred to above, it bestows some interest, because it is an inscriptional evidence to polychromy on the very images on which it was practised.

Further interest of this piece of evidence can be the use of the word, *citrita*, instead of *varṇita* or a similar term. This may indicate, though it cannot be asserted, that the polychromatic images have been referred to as *citra* or *citrita* without being adopted any other word of the same meaning. If this is so, it goes without saying that it has been employed throughout centuries as a technical term. Then we will have more definite evidence linking Patañjali's use of *citra* on the one hand and on the other the terminology — *citra* and *ardhacitra* with reference to an image in the round and relief respectively — found in the *Āgama* literature. If we turn from ancient to modern practice, some vague information has reached us from two or three sources. Accordingly stone (perhaps alabaster) images are still coloured in some centres in Northern India. But this meagre news does not permit us to enter into any details.

If "the wood-work" which "was no doubt carved and painted or gilded"[38] to decorate the walls of a monastery (of the 5th century A.D.) at Mohrā Morādu cannot be taken as polychromatic wooden sculpture, we are not in a position to point out any early example which is datable. But the fact that wooden images were in use in Brahmanical temples is evidenced by a few known examples, such as those in the temple of Tirukkoyilar[39] (South Arcot District, Madras) and the famous Jagannātha shrine of Pūri; in the latter temple the images

[35] A.I., Plate 41, see p. 201 for its description.

[36] A.A.I., p. 92.

[37] A.S.I.; A.R., 1914-15, Pl. LXIX, o and p., for the transliteration and translation of these inscriptions numbered as XVII and XVI respectively, see pp. 124-26. For the details of the images bearing these inscriptions, see pp. 98 and 99-100, items 5 and 4 respectively. We are thankful to Mr. M.N. Deshpande of the Archaeological Survey of India for drawing our attention to this.

[38] G. Tax., p. 159.

[39] E.H.I., Vol. I, Pt. 1, p. 49.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

are renewed every twelve years. Polychromy on wood has been practised till the present day.[40] Those who are called "Muccīlu" in South India, or rather in Āndhra, even to the present day follow most of the technical details described here, while colouring the wooden vehicles of the gods for the use in temples, viz. for taking them in processions.

Most probably there still exist a considerable number of images made of various materials showing full, or at least traces of, polychromy. However, little attention has been paid to these matters until now and, as a result, such examples belonging to different ages, have hardly come to light. It is, therefore, almost impossible to treat the subject fully until an independent and systematic investigation is made patiently for a considerable length of time.

[40] J.N. Banerjea discusses some of such items, vide D.H.I., pp. 211-12.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

Chapter XIII

THE ARCHAEOLOGICAL ACCOUNT OF THE CLAY MODELLING

THE PROBLEM OF NOMENCLATURE

Since we have given in the foregoing chapters a detailed account of the clay modelling as well as of the polychromy on the images made of various media, basing ourselves on ancient treatises, it is now worthwhile to attempt to gain a general picture of the same on the basis of archaeological evidence, i.e. the actual past practice, for the purpose of a comparative study. The archaeological finds of the Indus civilization and the terracottas of subsequent ages prove that clay has been in use for shaping figures from the 3rd millennium B.C. But all these fall outside our consideration, for we have precisely defined the scope of our investigation in the introduction and accordingly, our present interest is confined to unbaked clay images, that too, those formed with a particular technique. This roughly sets the time limits, namely, our investigation starts, as far as the archaeological evidence is concerned, from the beginning of the Christian era, as any specimens of the earlier date are yet unknown. Even then the task becomes very difficult owing to certain strange circumstances. Unless these difficulties are explained, the factors contributing to them may persist indefinitely and, secondly, one may even not be able to appreciate the labours bestowed in constructing the scattered bits of information into a coherent whole that follows, however limited it may be. And such an elucidation occupies, rather inevitably, a considerable space in proportion to the main theme.

The intriguing problem that one confronts at the very beginning is the misnomenclature current for a pretty long time in Indian archaeological literature. There has been, unfortunately, no clear idea of the distinct connotations of the words, stucco, terracotta and (unbaked) clay figure, among the Indian archaeologists, with a very few exceptions. For a considerable number of them, as can be better realized from conversations, any small clay figure or figurine, whether baked or unbaked, is terracotta, though the very connotation of the latter is unambiguous, viz. cooked or baked earth, i.e. baked clay figure, likewise, any unbaked clay figure of moderate or big size is stucco and again the lime, whatever its kind may be, is stucco. This is the case not only with Indians, but also with those who speak English as mother tongue and to a limited extent with those Europeans who wrote in English. In the German literature devoted to Indian art, there are no works, as far as our knowledge goes, touching this issue, but there are a good number of books dealing with Tarimian (East Turkistan) art, in which the clay images are always specified very precisely, viz. Lehmplastik, though at times Le Coq speaks of stucco in connection with grounding of the wall-painting, which is obviously incorrect and one or two similar cases may be found in

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

German literature too in respect of the use of stucco. Similarly, there is, on the whole, a clarity in French literature too, in which unbaked clay images are described: terre crue, though rarely one may notice some authors making a slip. The whole trouble is with the English literature, by which we do not mean the entire English literature dealing with arts of different countries (to give a verdict on this point is beyond our scope and knowledge) but that is concerned with Indian archaeology and also that related to archaeology or art of those countries having close links with Indian art.

Though some stray discoveries of unbaked clay figures were made prior to the excavations at Jauliān, the fact that unbaked clay had been employed also in India as a medium of serious type of images meant for permanent use, was noted, by a very few only, for the first time after the Jauliān examples were brought to light and this is perhaps understandable too. That is why Foucher exclaimed so much of Jauliān discovery,[1] but this exclamation too did not have any effect in the field, as one is inclined to infer from Marshall's observation four decades later (i.e. not yet completely two decades from now) that the widespread use of unbaked clay was a fact that had generally escaped the notice of the archaeologists.[2] Whether others missed it or not, is a different matter, but that the people of the department which he himself headed, utterly failed to do so, is an amazing fact, especially when he himself was one of the few exceptions who did not commit the mistake and who stressed the importance of this medium. Only to give a single example, one and the same head, reproduced here as Fig. 29 (Pl. XIV) was named in three different ways in three different places in the captions of the departmental photo-archives of those days, once as clay head, then stucco and also as terracotta.[3] It is not to blame Marshall for this, as after all it is not humanly possible for any Director General to attend to each minute detail of the department personally. But the point is, why the men of the department failed to coordinate the work along with new discoveries, especially when they were of a new kind and the importance of which was underlined. Alas! the case is not different—a matter still to be wondered at—even with today's Indian archaeology—whether inside or outside official organ—as with art history, in spite of the publication of Marshall's *Taxila*. French archaeologists were specific in the case of the clay figures unearthed from the sites of Afghanistan. Only two scholars, Foucher and Marshall, noticed the importance of unbaked clay figures in the sites of Gandhāra and of neighbouring regions. It is very gratifying that Marshall made several statements in *Taxila* to that effect with considerable emphasis. However, he failed too, unlike in the case of stuccos, to give a technical account, even a brief one, of unbaked clay figures. At least he could have devoted a separate chapter to

[1] M.A.S.I., No. 7, p. 22 and 38.

[2] Tax., Vol. II, p. 439.

[3] Vide the description of the same Fig. in the List of Plates. The same inconsistency can be noticed also in the case of our Fig. 24 (=21, 22 and 23), see ibid. for its description.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

this class of figures instead of including them in the chapter of terracotta, which could have been a pointed reference and thus could have been more effective and by doing so, he could have rendered more service.

Since both the materials, stucco and clay are different, and again, baked and unbaked techniques of clay too are altogether different, everyone is expected to have a clear notion about stuccos, terracottas and unbaked clay images, irrespective of any discoveries. Discovery of any hitherto unknown and unsuspected things may make us realize the rôle played by a given material in history, but why should any misconception arise about their nature at all? This is a basic aspect of our problem. It seems that there is not one reason for this deplorable state of knowledge. Neglect, or carelessness or unawareness is the first reason for it and there is no point in denying this fact. When and where there is an unawareness, that allows other factors to lead us further astray from the reality. We have no claim to be able to enumerate all such factors, in case there are many, but we can mention two of such quite plausible items.

Although the stuccos are discovered from other centres too simultaneously with the sites of Indo-Afghan school, it is those from the latter which have attracted almost the total attention of scholars, obviously on account of their abundance or of some other reason. A majority of Indo-Afghan stuccos are modelled over a core of pure clay or clay mixed with rubble or its kind and thus, clay forms the greater bulk of those individual pieces (those from Gandhāra school are known to have been executed differently). Precisely on account of this circumstance people have begun to call each and every image as stucco, in which clay is found. This is a basic error, caused by the lack of criterion. It is not the material that forms the bulk, which is a deciding factor, but it is the medium in which features are brought out, because we are interested in the figure having features or details, without which the remaining is mere lump or bulk. In Indo-Afghan school either clay or stone forms the approximate shape of the body, but no details or no features are found in them. Again it is in stucco that the latter are brought out. That is why they are stuccos. If this criterion is not accepted, we would have only a handful of stuccos in Indo-Afghan school, namely those worked out purely in stucco and, we have to call the rest either clay images or stone sculptures. One cannot claim that the Indo-Afghan school has produced thousands of stuccos. As a matter of fact this criterion should be accepted in a great majority of cases, otherwise no painting could be called painting, instead one would have to call it either canvas or paper figure or else wall figure, etc. It is, therefore, wrong to name those images as stuccos which are made mainly of clay and especially those whose features are executed in clay.

It is difficult for us to indicate precisely how long this confusion has prevailed, but it nay be pointed out that this has certainly continued from the beginning of the present

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

century. A great majority of the images (or fragments) brought to light from the entire Tarimia (East Turkistan) — irrespective of any of its regions — by different expedition parties are purely unbaked clay figures and if there are any stuccos or those made by employing some compound or the other of lime, they are comparatively few and small too, about which no one needs to foster any doubt at all. Nevertheless it is a very unfortunate thing as well as a matter of surprise that a meticulous scholar like Aurel Stein invariably called all the clay figures as stuccos from the time of *Preliminary Report* of his first expedition to Khotan region, published in 1901 (i.e. a few years earlier than Marshall joined the Indian Archaeological Survey) and he continued this trend in his further works, *Sand-Buried Ruins* (1903) and *Ancient Khotan* (1907). Meanwhile Grünwedel published his two reports — one on his first expedition to Turfan and the other on the second (third of the German expeditions) to Kucā and Turfan — in 1906 and 1912 respectively. Besides the usual German term, Lehmplastik, Grünwedel has used, probably under the influence of Berthold Lauffer's English writings, the English phrase: Clay Figures, within inverted commas quite frequently in the first report, though he has not altogether abandoned it in the second report. Even this did not make Stein to reconsider his nomenclature, and hence he has repeated it in *Serindia*, 1921 or even in *Innermost Asia*, 1928, the latter being his last major work on the subject. There is no need to give any reference to this, because one can find it in any page of all the works mentioned above, in which the images are spoken of. He has not felt the need of changing his nomenclature, for he has had a serious misunderstanding, as can be noted — to give the classic example — in his description of the condition of clay images in Thousand Buddhas (Tun-huang), where he has said: *It was only too easy to realize from the first how much all this statuary in friable stucco had suffered in the course of long centuries through the natural decay of its material, mere soft clay.*[4] Hence Andrews, who also has published independent works, and others, like him, who assisted Stein in preparing the lists of objects appended to each chapter of the latter's major books, have followed the same trend. Some others, who are not directly connected with Stein's project, have also done the same in connection with the Tarimian (East Turkistan) art.[5] Among them come also a vigilant archaeologist as Mortimer Wheeler, who has described the Central Asian images as stuccos only while distinguishing those from Afghanisthan as stuccos and clay figures[6] and, Rowland, who names Shorchuk panel of images as stuccos,[7] which are in fact unbaked clay figures. True, all this is concerned with Tarimian (East Turkistan) art, yet Stein's contributions to and particularly his connections with the Archaeological Survey of India or the Indian archaeology at large, which are more relevant to our theme, hardly need to be

[4] Ser., Vol. II, p. 794.

[5] As for instance, Margaret Medley in a review (B.M., Vol. CII, No. 689, August 1960, pp. 371–72).

[6] For these two descriptions see Ant., Vol. XXIII, p. 9 and 12 respectively.

[7] A.A.I., pp. 113–14, see Pl. 62B instead of 63B. He has done the same in his previous articles also.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

elaborated. Hence his unprecise designation of Central Asian images, seems to be one of the factors contributing to the misunderstanding of nomenclature in Indian archaeology, though it would be unjust to attribute the entire responsibility to him. It is not difficult to notice it from the incidents as these: Barrett calls Fondukistan images as terracottas in a general way, while doing so, as is obvious, he has clay figures in view. But according to the Excavation Reports published by the French archaeologists they are certainly unbaked clay images, about which there is no doubt (some of these are in Musée Guimet and hence the personal verification of them is easy in the case of European scholars). Philip Rawson too names one of the sitting Buddha images of Fondukistan as stucco, which is in fact an unbaked clay figure. Goetz narrates that "Gandhāra sculpture (in painted stucco, a method introduced from Alexandria) had spread deeper into Central Asia" and says that the Fondukistan "clay sculptures" are "covered by painted stucco."[8] First of all it is doubtful how far this Alexandrian theory of Gandhāran or Indo-Afghan school of art, expounded by Wheeler is tenable in the case of Gandhāran or Indo-Afghan art itself. It has hardly any value in the case of the Tarimian art, for it is a gross misunderstanding to consider the images of that region to be stuccos. This is an excellent example to illustrate how a misunderstanding at even one point leads to a chain of untrue conclusions. This is not the end of the story, which reaches its climax when some scientists in England as well as in India have described the Central Asian clay specimens after chemical analyses as stuccos.[9] It may be further pointed out at this juncture that there cannot be any wonder, if the same misunderstanding that has centred round the employment of clay core in many Indo-Afghan stuccos, which led to call clay figures too as stuccos, might have influenced to some extent, i.e. at least later writers, in designating Central Asian clay images as stuccos. If so, this is in a way complementary to each other.

What has been sketched above, is a case of misunderstanding, in which some outstanding

[8] For Barrett's statement in his article: *Sculptures of the Shāhi Period*, see O.A., Vol. III, No. 2, p. 57, column 2. It may be incidentally mentioned here that all the images of Fondukistan, as far as illustrated in G.S., are correctly designated as unbaked clay figures, except two, namely, the princely couple, Pl. 53, p. 70, which on the contrary are specified to be terracottas and this seems to be a slip, although it cannot be determined until the French version is checked whether or not this is made by the translator. The unbaked clay image reproduced by Rawson with an incorrect specification of it as stucco in his article: *The Methods of Indian Sculpture*, O.A., Vol. IV, No. 4, p. 140 (column 1, top) is the same that reproduced in the coloured Pl. XVI in G.S. (p. 147), though photographed from a different angle. Except for the last few paragraphs in which certain aesthetic theories as expounded in the Sanskrit works, this article is a remarkable exposition of the Indian art and we are not aware, if a second exposition of this standard has appeared in the last two or two and a half decades. Hence, it is true, this mistake is a very minor one, considering the theme of the article. On the other hand it illustrates, too, our theme very well, for it comes from the pen of a scholar of minute observation and clear thinking. It could not have happened, if the tradition of using unprecise designations has preceded his writing. For Goetz's remarks, vide F.T.Y.I.A., p. 77 and 78 respectively.

[9] A.I., No. 15, 1959, pp. 94-7; this has already been once referred to in the introduction, note 3, with further details. See also A.Kh., Vol. I, Appendix F (p. 586), where A.H. Church's chemical analysis of certain clay figures, is given, but amazingly enough he too calls them stuccos.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

names also are unfortunately involved. To show somebody's errors is certainly not a purpose in itself, if they are not of great consequence. But these errors as such are distortions of the historical facts and also leading to further wrong conclusions. Hence these must be checked effectively by bringing them to focus in their nakedness. Otherwise these would, no doubt, continue further. This is a greater necessity in Indian field, where a previous piece of research would hardly have any effect on the next one and hence oft-trodden and outdated trends perpetuate meaninglessly. Besides the misunderstanding there is also a misleading factor which must be taken into account at this point.

PROBLEM OF ORIGINAL OR ACCIDENTAL TERRACOTTAS

It has been already pointed out that the *Āgama* texts prohibit the use of terracottas for worship, especially in temples. It requires a further and an intense investigation, before a definite conclusion could be reached at whether or not this prohibition has been universally observed throughout the length and breadth of the country in all centuries. Supposing it has been accepted as a universal rule, even then there is a room for terracotta, viz. it can be employed for the decorative purposes. In this way one can explain so many terracotta temples and figural panels on them and more important discoveries from certain centres like Mīrpur-Khās and Ahicchatrā — more important because of their size and early date. The point that must be noted here at once is that there is no evidence at all to prove that either Mīrpur-Khās or Ahicchatrā examples were used for worship. But, on the other hand, we would perhaps not be far from the truth, if we take it for granted that this prohibition has had a general and common bearing on the question of using terracotta, namely, this technique has not been very much favoured, as far as the statuary meant for worship, is concerned, irrespective of whether it is Hinduism or Buddhism, etc. This view may be supported, as we shall notice in the XVth chapter, also from the practices in some foreign countries, in which there has been a considerable direct or indirect Indian influence. Bearing this in mind one should consider certain clay examples discovered from various centres. In any such considerations the technical issues are better aids than the other aspects in deciding the question whether all those specimens generally accepted till now in the name of terracotta have been really or originally terracottas.

The objects that should be considered at first are from Kāśmīr and Jammu. The ground within the temple at Hārvan and its courtyard were paved with tiles and in this case there cannot be any dispute about their being baked objects. Besides these, some fragments of terracotta images of a considerable size were also found here,[10] but nothing more of these items is made known, except an ornament. Daya Ram Sahni dug for the first time at the site of the *stūpa* at Ushkar (sometimes spelt as Ushkur) as a trial, when he

[10] Mg., Vol. VIII/2, p. 60.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

found a number of terracotta fragments,[11] which were given to the Museum in Śrīnagar[12] and these were all reproduced by Kak. In 1937 Fabri also dug some trenches and found similar fragments. But he does not seem to be correct, when he mentions this monument as a monastery while Sahni and Kak describe it to be a *stūpa*,[13] which is also clear from the photographs published by him as well as others.

Both the above-mentioned monuments are within Kāśmīr proper, but there is another monument, equally important, in Jammu, within a distance of 20 miles from that town in north-west direction, at Akhnur, near the river. This monument is generally stated to be a monastery, though nothing stood above the ground and no excavations had taken place here. A considerable number of "terracotta" fragments, including many human heads, were picked up from here also, and most of these went into private collections. But two heads —Pl. XII, Fig. 25 (26, 27 and 28 being different views of the same) and Pl. XV, Fig. 31, reproduced here—came to the Indian Museum, Calcutta[14] in 1935.

But it is from the labours of Fabri that we know a little more about the images of this centre now. Rowland named Kāśmīr figures as stuccos, and the passage was quoted by Fabri by adding *sic*.[15] The former is one of those who, as shall be noted in the next pages (*infra* notes 82 and 91), often confusedly specifies the materials even where there is a clarity. Foucher too mistakenly mentioned four of the Ushkar examples as stuccos in a Foreword to Kak's work, while Kak's caption of the relevant plate designates them as terracottas. Goetz unhesitatingly names the same Ushkar specimens as stuccos.[16] If these incidents are left out, all of the above-mentioned scholars unanimously and without any question name them terracottas.

There is, however, a big question here. It is extremely doubtful, if they were originally terracottas. If the images in question are big and modelled more or less on the lines described in previous chapters, there are methods and means to ascertain the question whether given specimens were intentionally baked or were burnt in the accidental fire. In a great majority of the cases the question can be satisfactorily resolved, even if they were burnt like a charcoal and we believe to have gained this insight by working on Central Asian images

[11] A.S.I.; A.R., 1915-16, pp. 57 and 62, in both cases see footnote 1.

[12] A.M.K., pp. 152-53, Kak specifies here that eleven of these fragments are heads. These are likely the same which he reproduced in H.P.S., pp. 12 (lower fig.) - 22 and other fragments were also published along with these in pp. 12 (upper Fig.), 23-24 and 26.

[13] Mg., Vol. VIII/2, p. 56, where the sketch plan is also included. Compare A.S.I.; A.R., 1915-16, pp. 61-62 and A.M.K., pp. 152-53 and H.P.S., p. 11.

[14] On our enquiry the authorities of the said museum have kindly communicated us this information through their reply of 26th March 1968.

[15] Mg., Vol. VIII/2, p. 54.

[16] Foucher, A.M.K., p. XIV, the Pl. in question is LVIII; Goetz, Mg. Vol. VIII/2, p. 67; F.T.Y.I.A., p. 77.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

nearly for five years in Berlin Museum.[17] A satisfactory conclusion can be reached often, even if different views of the images are reproduced, showing the technical details. But, as we have not examined the originals of these, except two reproduced here and have not several necessary reproductions before us, we take a theoretical position and say that even if a few of them are originally terracottas, the majority of them may not be so, certainly not the two of our figures and the similar ones, for the technical reasons to be elaborated in the next pages. Let us consider here the rest of the points, viz. those found in the writings of various scholars.

It is stated that the heads in question — either those of Ushkar or of Akhnur specimens — were found outside the compound wall.[18] It is not known that the Buddhist edifices in question, had peristyle with cellular compound walls, as has been often the case with the Hindu religious monuments in Kāśmīr. Nor even they are known to have simple cellular compounds. In the circumstances there is not much ground to believe that these figures stood in the cells facing the courtyard and yet were found outside the walls because of the destruction. Hence it goes without saying that these were wrought on the front surface of the compound walls. This original position of theirs is an important point to which we come back again.

Except Fabri none of the scholars touched any technical aspects of these figures. He invented, however, a fantastic technique, as he found extremely romantic titles to these pieces. To put this invention in his own words: "An interesting technical point is that the heads were fired separately in a kiln, and attached to the relievo with wooden pegs; but the rest of this vast mural decoration was patted against the wall in wet clay, and fired *in situ*, so that the front layers become true terra-cotta, whereas farther back, nearer the wall, the clay did not get properly fired. This point is of considerable importance, for this is exactly what had happened in the latest phase in Taxila, when stucco slowly gave place to terracotta."[19] This he observed on the basis of the condition in which he found the figural fragments *in situ*, when he made trial trenches at Ushkar site. There are three points in this observation to be taken note of, viz. i. the heads were well-baked in comparison to the bodies; ii. there were at least traces, if not actual rests of the wood,

[17] Unfortunately we were thrown into difficulties by the circumstances and hence unable to give a shape to our labour till now. Yet we hope, we would be able to place the results of our investigation before the scholarly world one day.

[18] As for Ushkar, see H.P.S., p. 11. Fabri also dug the trenches along the front wall of the courtyard of this *stūpa*, i.e. northern wall, where Sahni once made trials, as was indicated by the former (Mg., Vol. VIII/2, p. 58, also see his sketch plan, p. 56). In the case of Akhnur finds Fabri specifies the spot in the following words: "Almost all these were found near the last remnant of what must have been once the monastery wall: a small remnant of a rubble wall built *exactly in the same manner as that of Ushkar*" (ibid. p. 61). It may be added that it is unlikely that a compound wall of a monastery was decorated in such a way; precisely speaking, it might have been, therefore, a wall of the courtyard of a *stūpa* or *caitya*.

[19] Mg., Vol. VIII/2, pp. 58-59.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

in the necks or trunks, and iii. the rest of the bodies were baked unevenly, i.e. the lower or inner areas were less baked than the surfaces. Another aspect to be taken into consideration in any discussion of the process of making the images, especially of pliable materials, is the dimensions of figures. According to his estimation, many of these images were of "half or three-quarter life-size" and Buddha images were of even "two-and-a-half times life-size" or to that matter "about five times life-size."[20]

In the absence of any published work proving Fabri's revision of the known data of Gandhāra or Indo-Afghan schools, one is unfortunately compelled to note from chronological and historical account of these schools given by him[21] that he utterly lacked the knowledge of the development of these schools as made known by several previous scholars. In view of this, no attention need be paid to what he observed at the end of the passage quoted above and hence we confine ourselves to the examination of the technique as he proposed.

It will not be wrong to assume that what he meant by wooden pegs, inferred to have been used for attaching the separately made heads to the trunks, was not different from what can be observed in our illustration, Pl. XIII, Fig. 28 from Akhnur. If that is so, such pegs cannot be inserted into the heads after baking. The type of clay core seen in the same illustration, speaks against this—a question which will be discussed further. The same would also prove invalid the possibility of baking the heads perfectly in a kiln separately. Baking of the heads too seems uneven in view of the condition of the two Akhnur heads illustrated here, which we are not ready to describe even as half baked, though they seem to have received some heat, because of which they have somewhat hardened. When the artists really intended to employ terracotta, it can be assumed that generally they did not favour to use ill-baked items—either parts or the full figures—unless they were too lazy or compelled by the reasons beyond their control. This is after all a matter of common sense. First of all the patting of small figures on the wall is possible but it is next to impossibility in the case of such dimensions. The proper, even and perfect baking of especially this kind of objects is not, technically speaking, possible in an open place, whatever the amount of fuel one may spend. If anyone tries to bake images of this kind after they have been modelled (or affixed as Fabri proposed), the fire bakes not only the figures but also the wall holding them, that too unevenly. It is obviously for this reason that this method would prove childish, if at all adopted, which is next to impossibility. On the contrary, all these aspects point singularly towards the accidental firing, whether caused by the human hand or otherwise. In other words it proves that they were originally unbaked figures. In that case they must have had a sheltering roof protecting against rain or snow fall. That these fragments still bear the traces of colour

[20] Mg., Vol. VIII/2, pp. 58 and 61

[21] Mg., Vol. VIII/2, pp. 59 (Paras. 3-5)-60 (Paras. 1-5).

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

indicates that they were originally polychromes. This makes the protecting shelter, i.e. roof all the more necessary. This roof might have been of timber or other material. In any case it might have fallen down in the initial stages of the calamity. If so, this leads to the early detachment of the heads, because the neck is the weakest point in such images and this was amply illustrated in Gandhāra and Indo-Afghan schools in the case of stuccos too. In that case, being small in size and having fallen down on the ground, they would have naturally received more heat under a load of timber and hence have been baked harder, as if really burnt in a kiln. At the same time this makes the baking of the bodies uneven, especially when the flames go up from the ground. Fabri himself referred to the fact that an evil Hindu king, Harṣa destroyed Buddhist art in Kāśmīr towards the end of the 11th century.[22] But it does not seem to be the kind of agent which caused this type of destruction. Referring to a Persian Muslim source, Daya Ram Sahni showed that the destruction of Kāśmīr temples was done by "Sikandar named Butshikan, assisted by a Hindu convert named Sūha" by way of "piling the heaps of wood in them and setting fire to them."[23] Even if this professed iconoclasm was not the real cause for the destruction of the particular monuments — Ushkar and Akhnur or even Hārvan — this is precisely the kind of conflagration that ruined them, converting the unbaked clay images as terracottas and turning the whole images into fragments. A full and systematic excavation, if undertaken at these sites in future, may bring the evidence of accidental conflagration to light. In the absence of some evidence in the form of ashes, charcoal or at least the effect of heavy smoke, etc. in the given sites, the archaeologist may face difficulty in interpreting his unfortunate finds, but a sound knowledge of the technique of modelling in unbaked clay and of the impact of that technique on the actual creations may aid him in determining the question as to whether a particular piece was originally terracotta or an unbaked clay figure, though the unwanted agency of destruction might remain unexplained.

If there is any analogy for the practice of decorating the compound walls by modelling in unbaked clay, that would support our view that the so-called terracottas of Ushkar and Akhnur were originally unbaked clay images. Such a practice in the neighbouring regions like Gandhāra did not yet come to light, though rows of stuccos were known to have been executed there against the walls within the rooms or corridors of the houses in the form of high relief.[24] Such being the case, we have to look to the distant regions for analogy, in Khotan region. North (but slightly N NE) to the modern Khotan town there are ruins of a huge *stūpa*, which has become known under the name Rawak *Vihāra*, though not a precise appellation. This is not identical with another site known as simply Rawak, about which some writers do not show any clear notion. The former is (nearer to the modern Khotan) situated at the distance of approximately 10 miles from 80° long. E

[22] Mg. Vol. VIII/2, p. 60.

[23] A.S.I.; A.R., 1915-16, p. 56.

[24] For example, see Tax, Vol. III, Pls. 96c, 97a, etc.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

and of 25 miles from 37° lat. N and the latter (i.e. simple Rawak) is closer to Endere (another famous ruin in Taklamakan desert) situated at the distance of 1 mile from 81° long. E and of 9 miles from 38° lat. S approximately. The Rawak *stūpa* (*vihāra*) has a courtyard enclosed by two walls running parallel at a distance of 9 feet. Though the entire walls were not excavated, there is every reason to believe that these parallel walls ran all along. The inner or the main wall is 3′ 6″ wide at the top at present and its height in the present damaged condition, is 11 feet. The outer wall is only of 6″ width and its height cannot be determined because of heavy loss. This *stūpa* or rather the complex as a whole has many features in common with Kāśmīr monuments in general, but it is not our present concern to expound them. All the exposed areas of both the walls have continuous row of purely unbaked clay images in groups (over ninety on the inner wall, so far exposed) on both the sides as decoration. This situation clearly indicates that this scheme has been carried out throughout and uninterruptedly. Thanks to Aurel Stein, the great scholar of unparalleled perseverance, because of whose labours we can see them now in several illustrations,[25] one of these is the most important, giving the idea of many aspects (A. Kh., Vol. I, Fig. 66, facing p. 496). Obviously there was a roof originally covering both these walls and sufficiently extended to give shelter to the rows of images on both sides, especially the external faces of the two walls. If it were so, it was a closed passage running through the entire compound wall and as such there must have been some kind of openings letting the air and light in, about which, however, Stein did not speak, presumably for want of archaeological evidence. Nevertheless we may surmise that at least the thin or the front wall might have had some kind of windows, may be latticed type. Many of these images were not less than 10 feet high. These double compound walls might have served as a passage for the circumambulation for the worshippers before they could reach the main shrine and even before entering into the yard. It is not possible to imagine what was the experience or the thrill of those who walked round the passage, thickly covered with the commanding images of super human sizes and fine workmanship, very closely at both sides. Was it fear or transformation! It is a magnificent sculptural gallery unknown in any country of the Buddhist world at any age. This should open those eyes, which have the habit of sticking to drapery and as a result this tendency leads to rate the Tarimian (East Turkistan) art very low. At the end it remains to be added that in the absence of any conclusive evidence, Stein was, expressly, in difficulty and hence on a negative evidence he suggested that this monument might have been abandoned any time between the 3rd and the 7th centuries A.D. Stylistically speaking, these images have kinsmen in the north, in Kizil, to specify, in the "Statuen Höhle" (assignable to the first half of the 6th century A.D.) on the one hand and on the other they resemble in some respects those of Mathurā and Indo-Afghan crea-

[25] A.Kh., Vol. I, Figs. 61-69 and Vol. II, Pls. XIII-XVIII, for the plan, see Pl. XL. For the full details, see Vol. I, pp. 482-506, but for the specific points mentioned in our text, see ibid., pp. 484 and 499. For the Stein's suggestion of date, see ibid., p. 501.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

tions of the 4th-5th centuries A.D. This analogy gives a rough idea of the period of Rawak *stūpa* images. It is not, therefore, warranted to place this monument or rather its images at a date so early as before the 3rd century A.D. At the same time it appears that there would not be much reason to date them as late as the 6th century either. Hence tentatively these may be assigned to the 4th-5th centuries A.D., leaving some margin and without pinning down to a particular point for practical as well as scientific reasons.

Now the question is whether or not this analogy between the rows of images on the compound wall of Rawak *stūpa* on the one hand and those belonging to Kāśmīr and Jammu monuments on the other would lead us anywhere? Personally we think it does. If we have to rely upon Fabri's description based on his trials at Ushakar that the entire front wall of the courtyard "was once covered with a gigantic mural relievo in terracotta, from end to end,"[26] one is very greatly inclined to conclude that these images at Ushkar occupying the entire length of the front wall were not originally terracottas, but unbaked clay images fully painted, as was the case with those of Rawak *stūpa* (*vihāra*), and hence sheltered with a roof to protect their medium, i.e. unburnt clay as well as their polychromy, though it remains to be seen whether this work of figural decoration was carried out on all the four walls and on both of their sides or confined to the front wall, unlike in the case of Rawak *stūpa*. Thus, when we have sufficient reasons to take it for granted that in Ushkar the conflagration caused a havoc, this would lead to attribute all these aspects to the Akhnur monastery, if it is a monastery, which we doubt on the basis of Ushkar analogy and Rawak *stūpa*, although, in reality, no work has been done here to give any clues.

Similarly we have a strong doubt whether all those from different sites of Gandhāra or Indo-Afghan sites, which had hitherto been reported as terracottas, were really or originally terracottas at all. In any case, unless our own examination of the originals (if possible any time in future), convinces us to change our impression, we are not ready to believe at least certain images, like the one published here in Pl. XV, Fig. 33 and a Bodhisattva head which Marshall so fondly published as the frontispiece in *Taxila*, Vol. II (see also Vol. III, Pl. 137c, no. 174 and dust jacket of G. Tax., 1960 edition) were really terracottas. As a matter of fact we foster similar doubt about the rest of all the pieces (except three or four small ones), which Marshall published in Pls. 137-138 of *Taxila*, Vol. III. They should no doubt be re-examined and re-assessed, for they have outwardly a different feeling and texture, which is not usually possible in the case of real terracottas, as the technique of the latter is quite different. Not only those which have been published by Marshall but also the entire known lot should be scrutinized anew, for the technical aspects, particularly the method of modelling can reveal the truth at least in a great majority of the cases.

In this way we have two categories of the objects, firstly those which go under the

[26] Mg., Vol. VIII/2, p. 58

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

name of stucco—in certain cases a misnomenclature—and secondly, those which are reported to be terracottas, which is an example of misleading element in some cases at least. Then the question arises, naturally enough, whether one has to believe the relevant previous literature or not. Perhaps one can do neither, for one is aware of the previous inadequacies to believe everything before him in writing and one cannot at the same time have any scope to examine the entire lot for himself to disregard previous accounts totally, with evidence and confidence. Whatever may be the case with the opportunities that individual worker may get, the basic need remains the same, namely the entire lots of these two categories should be thoroughly re-examined. If that is done, one does not know how many out of those lots would turn to be the examples of the unbaked clay images, which were hitherto counted by some as few and by others none even.

Whatever may the future attempts in this direction and their results be, a few examples, however, are fortunately known, on the basis of which an attempt can be made here to see what technical details these specimens reveal. As is slightly implicit from the above discussion, all the hitherto known examples come from the Gandhāra and Indo-Afghan schools, Kāśmīr[27] and Jamnu.

GENERAL REMARKS ON GANDHARA AND INDO-AFGHAN SCHOOLS

For certain unfortunate reasons scholars are divided into two opposing camps with regard to the Gandhāran and Indo-Afghan schools of art, and consequently this field—though scholarly and academic—has turned to be extremely sensitive. In addition to it, a new kind of sensitivity, which is the little child of recent politics or political awareness, and so more dangerous, has come into being, though the time has to decide to whose advantage it has appeared. In view of this and by way of clarification of certain limitations imposed on us it seems advisable to make a number of remarks in order to avoid possible misunderstandings.

First of all, a school of art, rather two schools of art, hitherto known generally under the designation, Gandhāran art is also called Graeco-Buddhist art and lately Romano-Buddhist art. Admittedly the conditions of this school are very complicated to explain the causes of its development fully, but this much is clear that nothing is warranted to name it Greek or Roman or even to annex these words. The major aspects that determine the nature of an art school are the content, form and technique, even though these *alone* should not be the guiding

[27] Kāśmīr is also sometimes included in the list of regions in which the Gandhāran or Indo-Afghan schools of art have spread. Actually not much is known about the Kāśmīrian monuments earlier than the 6th century. What we know are mainly Hindu monuments, in which also certain motives or architectural members like trepoiled arch, pediment above it, etc. are quite striking features. These lead a superficial visitor to conclude that Kāśmīr is a sub-province of Gāndhāran art (in old sense). In absorbing these originally foreign motives Kāśmīrian artists have showed a far more superior skill than Gandhāran artists or even Indo-Afghan artists and have created entirely different aesthetic values, a fact acknowledged only by some experts, but not generally realized. So this region should be treated separately from Gandhāran or Indo-Afghan schools.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

factors in designating a given school. With an exception of extremely insignificant minority of objects, this is an art connected with religion, viz. the Buddhism which is neither Greek nor Roman, but Indian. Whatever religion the Greeks might have had in the land of their origin, they have been converts mainly to Buddhism in the lands of their adoption, where the schools of art under discussion have flourished. These schools have not been originated, not to speak of their development, when the Greeks have been politically flourishing in these lands. And it is under the Kushans who have gained the power in the relevant areas in the 1st century A.D., the Gandhāran school has developed, even if its beginning is traced back to the later period of the Śakas, i.e. towards the end of the 1st century B.C., and it is even doubtful, if those Greeks have maintained their separate identity in the times of Kushans. Hence this school of art is not the contribution of the local Greek population. If this is the case with the Greeks living in the areas, it is fantastic to name the Gandhāran and Indo-Afghan schools of art as Romano-Buddhist, for the Romans had nothing to do with it in the sense of their having any concern for this religion and the art related to it. The theory of importation of artists also must be considered here. The Greek art proper has been already a closed or almost closed chapter by the time of inception of Gandhāra school to bring any Greek artists. Even if the Romans have been brought, there is no reason to think that such a great number of them came to execute all the innumerable monuments and sculptures over the centuries. Keeping this difficulty in view some scholars have attributed better pieces to the imported Roman artists and the bad ones to the local population stating that it failed to grasp the Roman spirit. This is obviously a narrow view in every sense, particularly because it is confined to the treatment of drapery and totally neglects the architectural side of it except certain motives. It goes then without saying that the local people have been responsible for these creations, in spite of unmistakable and too obvious Graeco-Roman influence, which could not yet be properly explained and hence fresh attempts should be made in this direction. The content determines the form, especially that of architecture and here the content being Buddhist it has led to the creation of *stūpas* and *vihāras* but not Greek temples. Sculpture does not on the whole give a different picture, though certain inconographic aspects of it, mainly in the form of motives, are supposed to be of Greek origin. When the question of technique arises there are some aspects (but not all even in this case) which are non-Indian in origin, whether one describes them West-Asiatic or Greek or Roman or Alexandrian (a recent Wheelerian addition though) or even something else. All this suggests that the designations Graeco-Buddhist and Romano-Buddhist are basically sentimental. If that is so, what remains is the old and comparatively neutral and hence the more valid term, viz. the Gandhāra school of art and to a great extent its offshoot, Indo-Afghan school, which make one or two chapters in the history of Indian art, and it is from this standpoint that their position or rôle or even their fate should be assessed.

Secondly, the writers from western hemisphere as well as those who follow them often

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

refer to the art flourished for several centuries—from early beginnings in Greece till the end of Roman empire or even somewhat later—and in many areas or lands, as "antique" or "classical", also when they deal with the arts of other countries, including that of Gandhāra and Indo-Afghan schools. It is totally confusing to those who do not have similar background, hence it seems better to avoid these terms in connection with many Asian countries for the reasons we have explained elsewhere in detail.[28] Instead we chose the phrase "Graeco-Roman-Traditions" to indicate the same. It is, therefore, clear that by this we do not mean any single art practised by both these peoples with a joint effort. We mean by it two different traditions in their wider sense, though one is derived from the other.

Thirdly, Marshall has suggested that the art hitherto known as Gandhāran art should be considered to fall into two schools, naming the early one as Gandhāra and the later one as Indo-Afghan. But this view has found strong opposition and he has unfortunately yielded to it in spite of the fact that he has been able to explain the character of these schools clearly. When one speaks of two schools, it does not necessarily mean that one was closed by the evening and the other arose in the next morning. There will generally be a transitional period and overlappings in spite of which one has to accept a given and proper time as a turning point, which becomes a convention in the history of art, as the Notre Dame is a starting point of Gothic architecture or period in European art. Nor should such a proposition mean that the new school is started from the debris of the older one. Nor does it necessarily mean that the two schools have no connection between themselves. The same people do forget the fact that they unquestionably accept the classification of the Greek and the Roman art, though the latter is derived from, if not the continuation of, the former. In spite of that why should so much of opposition arise in the case of distinguishing the Indo-Afghan art from that of Gandhāra? There seems to have existed an untold story at the back of the minds of Marshall's opponents. They seem to have been reluctant to accept it in fear, though unfounded, of the importance usually attached to the Greek, Hellenistic or Roman—in whichever way one might call it—influence on these schools and moreover, in fear of disappearance of the phrases as Graeco-Buddhist and Romano-Buddhist. Whenever or wherever there is an unmistakable influence, one cannot remove it by changing the phrases or names and in spite of such a change, necessitated by stronger reasons of internal development, any influence can be studied as ever and narrated, for it is desirable for an overall understanding of an art. When reduced to principles, this conflict represents two views, one that makes internal development or intrinsic quality as the centre of its study, the result being the establishment of the theory of two schools— Gandhāra and Indo-Afghan—and the second that adheres to the influence as its centre of study ignoring all other

[28] Vide the introduction to our monograph, "*Technique of Gandhāran and Indo-Afghan Stucco Images*". The reason for not repeating that matter is that the occasion will rarely arise in this work to refer to the Graeco-Roman Traditions.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

aspects and also the changes that came in, in course of time. To linger to the influence steadfastly as a major factor seems to be an epidemic in the method of writing not only of history of Gandhāran and allied art but also of the history of art of the world at large. There are at least certain such instances, for example, the art of Kucā in Tarimia (East Turkistan). Ernst Waldschmidt takes the entire period of Kucān art,[29] as far as it is available now and divides it into two styles, the earlier phase as Indo-Iranian and the later phase as Chinese and, other scholars — among them Bussagli, a late-comer — have since then taken the queue without questioning the meaningfulness of this theory. From this, one can see everything in Kucān art except only Kucān, as is the case with Graeco-Buddhist or Romano-Buddhist. This is totally misleading and hence a quite undesirable way of approach. It goes, then, without saying that Le Coq's phrases, *Die buddhistische Spātantike in Mittelasien* and the kind are meaningless. Never and nowhere the influence is a whole, but always a part. Further, it is not the influence as such which is the main interest in art, but the activity of those who absorb and own the influences, which is the central interest of art and thus it is a matter of criterion. Judged from this standard Marshall's theory of considering the art hitherto known under one name as Gandhāra to fall into two schools, is worthy of acceptance, though there is room to search afresh for a better phrase than Indo-Afghan, as the term Afghan is much later than the creations under discussion. Or his nomenclature too — Gandhāra and Indo-Afghan schools — may be accepted, as it is, for practical purpose.

The term Irano-Buddhist proposed by Hackin cannot be an alternative here, for in its author's opinion itself it is not meant to cover the art of all those regions which the phrase, Indo-Afghan includes, but it is meant to characterize the art of the Bāmiyān region alone. Apart from that, for the following reasons this term does not seem to us convincing even in that limited sense. In this connection it seems fruitful not to confine our discussion only to Bāmiyān region, but instead to take into account the art of Central Asia at large, to which Bāmiyān is considered to belong geographically. Here also we must have a criterion and clear notion of it as a prerequisite. Should all the things "flowed into", be considered as influence in the field of art, irrespective of the question whether they have "flowed into" in a direct way or in an indirect way. Or should they be distinguished. It is said that Raphael has sketched an Indian elephant, along with its attendant, presented to the Pope by the Portuguese. Could a slogan be raised on this basis that apart from the Greek and Roman traditions the Indian tradition also has worked behind the Italian Renaissance Movement as

[29] Neither the phrase, Indo-Iranian nor the detailed study of the prevalence of Indian and Iranian elements in Kucān art go to the Waldschmidt's credit. Grünwedel has enumerated five styles of the entire range of paintings (whether on wall or on paper or on silk) found in the northern tracts of Tarimia (East Turkistan) which he has visited. He has pointed out that in one or two of these styles the Indo-Iranian elements and in another the Chinese influence are very striking, but his intention has not been to name them as Indo-Iranian or Chinese styles, which stand on an entirely different level. Waldschmidt silently takes these points and gives, however, a totally different twist to them.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

an inspiring factor and hence there is an Indian influence too in the Italian art of the Renaissance Period. Or let us take another example. If the 17th or the 18th century Dutch artists have used the Indonesian batik pieces in their stilllife paintings, can we deduce from this that there has been an Indonesian influence on Dutch painting and thus also on European painting in a wider sense. It is meaningless to say this, because the Dutch art has not changed its character on account of those pieces of batik. Still those pieces have found place in Dutch painting, as they have flowed into the material life of the Dutch society of that period, which fact has reflected in painting, without the latter being at all changed through the commercial intercourse. Let us suppose that an Indian painter has portrayed an Indian in European dress exactly with the vision and technique of an Ajanta or of a Rajput painter, could that specific piece be an example of European influence on Indian art? (Of course there is a considerable European influence on the contemporary Indian art, but that is not touched by this argument.) Thus one should or rather, must distinguish the things that entered into art in an indirect way, i.e. in the form of commercial commodities or in the form of a fashion and in the form of similar kind. For that matter even the material that is used to produce the work of art need not indicate the influence. Should that indicate, then one must also admit the Persian or some other influence on Roman and even on the European art of the Post-Roman period on account of the fact that the *lapis lazuli* was imported to different parts of Europe from either Persia or from the neighbouring areas. The same applies to the Indigo, which was often exported from India. The Roman artists used indigenous blues, if they did not get these imported colours. Thus it is a question of the replacement of one material by the other, but not the change of customary colour scheme. Had the colour scheme and approach to the colours of the Roman artist changed on account of his seeing the Persian or Indian painting, that must be reckoned as an influence, even the latter countries did not export those colours. Thus the question of influence on art is a subtle matter. One should call those factors as influence, when a change comes in the art in the aspects, like the way of conceiving the form or forms, the effect produced, or the composition, the colour scheme, or the general treatment, the way of execution, etc. which are intrinsic. In short one should consider all those cases as influence, when certain outside, hence hitherto unknown, factors flow into, which change the previous character to any degree. Or such cases also should be considered as influence, which, having no place in the daily life of a given people, intrude into their art and become part of it, though they do not change the character of that art to any recognizable degree. But the mere appearance of this or that foreign material in a work of art does not betray any influence; at the most what they do is to betray the commercial or cultural contact of one time or the other. When judged from this standpoint many things that claimed to be the evidence of Iranian influence on Central Asian art bound to appear superficial, say for example the use of pearls or the pearl necklaces, trousers and long coats with wide collars worn by men, flying ribbons at the rear of the head-dress, etc. In fact the trousers and the kind are obviously

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

suited to the cold climate and are probably of the Central Asian origin. If the Sasanian kings wore them, that does not prove that the Central Asians borrowed them. Persia is one of the countries which have been considered high by various Central Asian peoples — including the Turks and Mongols — throughout the centuries. The borrowing from Persia is not, then, an unnatural affair. Even if their borrowing is a historical fact, what does it matter in art. It was then a borrowing in the daily life, which reflected in art, the latter being uneffected at all, for the Central Asian approach or approaches remained as they were. By this it is not argued that there was no Persian influence on Central Asian art, that point shall be touched again. As a matter of fact the word, Iranian, employed in similar contexts is too vague. Several folks in Central Asia, take for example the Khotanese, were Iranians at least for certain centuries and yet art historians see the Iranian influence in the art of Khotan-Iranians themselves. This contradiction arises out of the fact that a term of far wider connotation is used to imply a narrow meaning, Persian. Coming to the point again, there are certain architectural aspects in Central Asia, such as the "*Laternen Decke*" or for that matter the whole plan of those monuments having the dome as central feature, etc. are supposed to be Persian in origin and in such cases one may reckon the Persian influence. Again the decorative motive like the geese carrying the pearl chains in the beaks, is also claimed to be Persian in origin. If that is so, such things also may be counted as influence, although as such these cannot change the total character of art. Nevertheless these should also be counted as influence, for they cannot be part of daily life to reflect in art, and as such they are intruders into art in a direct way. If we come to art of Bāmiyān region specifically, the Persian aspects — some kinds of arch, "*Laternen Decke*", ribbons flying from the rear of the headdresses, or even the moon and sun gods — present there, are not only comparatively few but also in such a subordinate situation that it is doubtful whether their position makes it imperative to call that art as a separate school with a special name, Irano-Buddhist.

If the chronological point of the Gandhāran and Indo-Afghan schools, arises it is better to clarify it in the following way. From the birth onwards — no matter whether one places it at the end of the 1st century B.C. or at the beginning of the 1st century A.D. — up to c. 250 A.D. is the period (i.e. roughly speaking this is usually described as the early period or phase), in which the Gandhāra art has flourished. The Indo-Afghan school starts some time in the second half of the 3rd century A.D. and ends some time in the 8th century A.D. and roughly speaking this is the period usually said to be the later phase. When the Gandhāra school is considered to end at c. 250 A.D. this does not mean that it abruptly stopped at that point. No doubt the Sasanian invasion politically proved to be catastrophical and an unrecoverable blow, bringing the Kushan Empire to the end. This means the loss of royal patronage, which is no mean a factor contributing to the disruption of continuity of artistic tradition, especially because this school of art has been more dependent on

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

the patronage of the Kushan Emperors. On the general social level this might not have been a blow to the same extent to the art tradition, but certainly a jolt at least, as the habit cannot be abandoned at once. Perhaps that is why we can see certain examples assigned to a time later than this point, though meagre their number may be. It might not have taken too long to settle the dust and hence the creative activity again set into motion, at the beginning slowly, but this time with a new impetus. We have to explain the early phase of Haḍḍa creations assigned to a period before 300 A.D. in this way. Thus the second half of the 3rd century is a transitional period. Nevertheless the Indo-Afghan school should be considered to have started a few decades earlier than hitherto believed. This explains the chronological riddle. Now it may be further pointed out that we are not so particular on the point of naming these schools in the way proposed by Marshall as on the point of recognizing the internal development which demands a demarcation and separate treatment. Hence, it would be welcome, if anyone gives better names than those proposed by Marshall, considering deeply all the related details. However, it may also be mentioned that though we have taken this position theoretically, it has hardly any bearing on our main theme, the technique of clay modelling, for two reasons. Firstly, the technique of using a given material has not usually changed in the historical days as rapidly as the style or certainly not as rapidly as the technique today pretends to have been changing (this remark is made keeping only art in view). Secondly, even if there has been a noteworthy change of technique of clay modelling (not the adjustments the artist makes as a given situation demands) between the two schools, there are no means of finding it out, as the material that came to light from the Gandhāra (i.e. early phase according to the old terminology) is very scanty.

Fourthly, it is a well-known fact that the Gandhāra school of art is not confined to the region — Peshawar valley and the neighbouring tracts, i.e. one of those regions lying west of Sindhu river — known by that name in ancient times, but spreads to a vast area, covering ancient lands like Taxila, etc. situated east to the Sindhu river in Panjab. Whatever words we may use in connection with this school of art in this book — Gandhāra, Gandhāra art, Gandhāra school of art or even Indian art — they have nothing to do with modern geographical or political connotations. On the contrary, these names have meaning related to ancient culture and thus these are known in the history of art. Thus we use these terms without reference to modern meaning and at the same time with the wider implication of the ancient term, Gandhāra.

Fifthly, when the term Indo-Afghan is used it covers those parts of ancient India roughly sketched above and in which the Gandhāran art has flourished and the entire Afghanistan. Afghanistan, as it stands, is a political term, but geographically its northern tracts in which the centres like Bāmiyān, etc. are situated, are reckoned to be Central Asian. In style as well as in technique of clay modelling Central Asian art, generally speaking, shows different aspects and features from the Indian art in general. But those tracts of Central Asia belonging to

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

Afghanistan, as the rest of its regions, share the style and technique of art commonly with those regions of Ancient India in which the Gandhāran art has flourished. Precisely this is the point that justifies the adoption of the term Indo-Afghan school, hence our inclusion of Afghan examples in this investigation.

Sixthly, speaking in very general terms, no technique is as simple as some believe to dispose it of in one or two phrases or sentences and the subject under discussion is one of those which are complex in nature, as the reader might have noted and will also note as we progress. To study such a complicated subject from the archaeological finds is not an easy task, as the technical points to be noted are numerous and the objects that have or will come to light may not be damaged at all desired places to reveal full information to us. This limitation is imposed on everyone, though it is also true that archaeologists have hitherto failed to record systematically all the technical aspects in detail found in the images already unearthed. The surroundings and the condition in which the fragments of images are found may be indicative of the subject in which we are interested. If some conservation work is undertaken at the very spot where the find is made, our chances of study may already be reduced. And when the objects are transported to museums these chances may be further lessened, for some steps are likely to be taken there to make the pieces "presentable". Our (Pls. X and XI) Figs. 21-24 are of the same group of the images and illustrate very well these stages of work: the Fig. 21 shows the group (*in situ*) just in exposed condition and the Fig. 22 (?) does the same in greatly, but not yet fully cleared condition, here the broken wall at the right corner is rebuilt to give the support and some restoration work, though not much, has been already done as may be noticed behind the male lay worshipper with cap (whom Marshall very fondly speaks of as *mleccha*). In Fig. 23 (?) (still standing *in situ*) one sees that not only all the extraneous substance is removed but also the restorations are fully made, including the attachment of a head onto the figure at the upper right corner, and a doubt arises whether it really belonged to that figure. Fig. 24 shows the group after it has been removed from the original place and re-installed in a specially built niche with glassed doors in the Taxila Museum, perhaps with additional repairs. The doubt arises, if the original measurements of the composition are strictly maintained in re-installation. Even if they were maintained, what a tremendous change has taken place. It has so hopelessly altered the aesthetic effect that such a compact composition looks like a thin group with empty spaces or space values. Of course it may be mentioned here by way of clarification that, as far as the photographs allow us to judge, there is no significant technical point to be noticed in this group even if no restoration work has been undertaken. But all the same this series of photographs certainly illustrates what a change can take place because of the restoration done either in the site of excavation or in a museum. Those, like us, who have no opportunity of studying the objects in various museums, which are in fact the last resort, have to depend greatly, if not entirely, on the archaeological literature, which, as has been shown, is not wholly reliable, so far as the images

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

made of clay, stucco and terracotta are concerned. Further, the lists of objects provided in archaeological reports are after all not descriptive catalogues by nature, where the authors systematically note down all the obvious aspects of each piece. On the contrary they contain only selective aspects and selection may vary from one archaeologist to the other. In spite of the vast literature produced, the dating of the objects like sculpture belonging to Gandhāran and Indo-Afghan schools is of uncertain nature, though the chronology of monuments has been fixed roughly. All these facts indicate the too limited nature of the data obtainable in this way. For the reasons to be explained in chapter XV, to have more data is all the more a necessity in the case of technique than even in the case of style to trace the development of technique proper. In the circumstances we do not, in fact no one should, make any attempt in that direction at this moment. Our treatment of the subject is, therefore, descriptive, though the attempt will be made, whenever possible, to note the historical facts as independent units.

Seventhly, we have gone through all the photographic albums belonging to the Archives of the Archaeological Survey of India, New Delhi, which are supposed to contain the relevant photographs, but found nothing more than what we have reproduced here. As a matter of fact, according to the captions in those volumes, some of these figures are terracottas. Nevertheless we have included them here, for there is some evidence, as we shall put forward our arguments in the next pages, indicating that they are originally unbaked clay images. We have even included one (Fig. 33) which provides no definite evidence, but shows only a general feature, suggesting it to be an unbaked clay figure. This process cannot be carried out further any more in the interest of scientific work, as the photographs give different impression of the material, depending on the light conditions in which they are made, as for instance, Pls. X-XI, Figs. 21-24. To try somewhere else for other photographic material involves the knowledge of original pieces to procure the photographs. Moreover, one should also know whether a given piece shows any useful technical details, otherwise the photographs are not going to serve the purpose.[30] Hence we must be content with what we have here. We are, however, going to refer to most of those published earlier.[31] Though different

[30] Nevertheless we made general inquiries by writing to the Peshawar Museum and to the Kāśmīr State Archaeological Dept., but received no reply at all. Later, we abandoned the idea of writing to Kabul Museum and Musée Guimet, Paris, for there is no certainty of our getting the photographs with proper views and moreover the publication may be delayed, in addition to its being expensive. It would be, however, desirable that one who can afford to visit all these museums, should undertake a detailed survey of this material and publish it with a great number of illustrations.

[31] Though in course of following discussion, references will be given to the specific illustrations revealing certain technical details, a list of most, if not all, of the pieces hitherto published may be given here for the sake of convenient reference and general information. M.A.S.I., No. 7, Pls. XIIb, XVIa and b, XVIIa and b, XXVb-f and XXIVb and d (also the item c of the last Pl. is said to be a clay head, but its texture, as seen in the photograph, gives a different impression; moreover, it was not included in the list of clay objects, p. 51, nor there was any reference to it in the whole text). Tax., Vol. III, Pl. 137f and h (both were of unbaked clay but the former has later been turned into half terracotta by an accidental fire), Pl. 138,1 and Pl. 139. The information

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

authors have reproduced them to give the examples of clay images as such only, some of them also reveal certain technical details.

Eighthly or finally, after each aspect of technique as reported by the archaeologists is presented, we on our part shall discuss related problems. These discussions are necessary for two reasons — either insufficiency of available information or our dissatisfaction with previous interpretations. Such passages are not, however, meant just for the sake of criticism, nor are the conclusions we reach at in those discussions meant to be final solutions to the problems concerned. If the study of the technique must be based on the archaeological material, any final solutions must, in fact, be supported by the evidence drawn from the actual finds. The main purpose of those discussions is, therefore, to draw attention to the problems involved and to place one of the long neglected aspects of art before the scholarly world for further examination.

True, the points raised in the above discussion on the nomenclature are not the part of the very technique of clay modelling, yet they have enough bearing on the question of any consideration of the clay images on all India basis. These are then a warning to the archaeologist. Precisely this is the justification for the lengthy discussion. Similarly justified are the remarks related to the Gandhāran and Indo-Afghan schools, because much of the material on which the matter that follows is based belongs to these schools and also because the peculiar conditions have rendered any discussion on these schools very complicated, besides the fact that these schools themselves are of very complex nature. Thus having cleared up the ground, we shall now turn to the subject proper.

BEGINNINGS OF DIFFERENT SCULPTURAL MEDIA IN GANDHARAN AND INDO-AFGHAN SCHOOLS

It is often stated that stone has been employed for making images in Gandhāra school — 1st century A.D. to c. 250 A.D. (or to some extent till to the end of the 3rd century A.D.). This view is based on the fact that the vast majority of examples hitherto discovered are made of

supplied in the brackets is based on Marshall's statements, but we have expressed our doubt whether even the rest of the figures reproduced in the same plates in the name of terracotta have been originally terracottas. We consider it probable that if the originals are examined, most of them may prove to be originally unbaked figures. The figure reproduced in the last Pl. may also be seen in G. Tax., Pl. 20. For those coming from Afghanistan, see D.R.A.A., Figs. 7-13 (from Tépé Maranjan), 149-156, 163-182, 189-194, 203 (from Fondukistan) and 264-66 (from Qol-I-Nader); Str., Pl. VI, Figs. 17-20, Pl. VII, Figs. 23-24 and Pl. XXVIII, Figs. 85 and N.R. A.B., Figs. 71-75, 77-79, 81, 91, 98, 99 and 100. Describing, in a general way, the figures reproduced in the last mentioned book, Hallade observes (G.S., p. 150, column 2): "Although made from clay and lightly covered with plaster or lime-slip, the modelled works found in cave G at Bāmiyān are related to the stucco school." But this needs scrutiny as far as the reported plaster cover or "lime-slip" is concerned. She also reproduced some of the Fondukistan figures already referred to here, see *ibid.*, pl. 126 and *Cf.* pl. 177 and also see coloured Pl. XVI and Pl. 175. In the same work the figures in Pl. 53 are described to be terracottas, which is doubtful.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

that material. This should, however, mean that it is a matter of predominance only, as other materials also have certainly been in use for the same purpose during this period.

Fragments such as heads and arms of unbaked clay images have been discovered in the apsidal temple of Sirkap and, their dimensions have led the scholars to suppose that originally these figures were up to three metres high or even slightly more. These pieces belong to the 1st century A.D.[32] A number of clay images were found in Shotorak and Bāmiyān which are assigned to the end of 2nd and 3rd centuries A.D. respectively.[33] That unbaked technique has been in use not only in India but also in Ceylon at this time for the purpose of forming images is also evidenced by literary references, which will be finally discussed in chapter XV.

It has been stated and will be further discussed with technical details that all those images, hitherto designated as terracottas, cannot be terracottas and critical observation of the originals may reveal that majority of them may be originally unbaked clay images. With this reservation we mention here the view held generally till now with regard to this

[32] This discovery has been made by Cunningham in 1863 in a temple numbered by him as 28 in his plan and which in his words is a big temple (A.S.I.; R., Vol. II, Pl. LVII and pp. 126-27) and this is the same as Marshall's apsidal temple. Cunningham reports to have found "numerous pieces of broken colossal figures" of clay in baked condition (in his words "in burnt clay"). Further statements of his create difficulties. Among other discoveries made by him in this temple are (to mention only those pertinent to our discussion) "a basket-ful of charcoal; and a very large quantity of quick lime", "a square bar of lead 13½ inches long and one-third of one inch thick", etc. Thus he speaks of only one basketful of charcoal, which does not indicate any later accidental conflagration. Moreover, in view of the presence of unmelted lead he dismisses this possibility. He gives, however, a curious explanation, saying that "the lime was intended for the repairs of the stucco figures, and that the charcoal may have been designed for the heating lead or lac for the fastening of the statues. Similar arrangements for mending stucco figures may be seen any day in the temples of Barma". In his brief report he has made no mention of any stuccos in the objects said to have been discovered in that temple, though later they have been discovered by Marshall. So it is difficult to know whether he merely infers the existence of stuccos or he means the clay figures by stucco. If the latter is the case, the misnomenclature about which we have discussed at length goes back as far as this time. Most probably this is not the case. Be whatever it may, certainly he considers that lead is necessary for fastening statues, which is a totally unknown, if not impossible, device. Further, he also hopes that such a device may come to light any day in Barma. All these indicate the inadequacy of explanation for the presence of different material and Marshall, who later has carried intensive excavations at all these sites, has emphatically refuted this theory and rightly asserted that those clay figures have been converted into terracottas by an accidental fire (see Tax., Vol. I, pp. 151-52 and particularly the note on the latter; he has mentioned this matter, though not in a critical tone, in other places as well, e.g. ibid., Vol. II, p. 439; B.A.G., pp. 30-31). He has also deplored the fact that Cunningham did not try either "to publish or preserve any photographs of the figural pieces" and in view of this it is difficult to guess what has actually happened to these pieces.

[33] For the plates showing these figures, see note 31 of this chapter and for the dating of the images from Shotorak, see Str., p. 69, para. 5 and p. 70, para. 3. According to another view, these belong to a somewhat later date, see A.A.I., p. 102. Of all the Bāmiyān caves the one indicated with G is considered by Hackin to be the earliest and he places it at the end of the 3rd century A.D., see N.R.A.B., p. 76. He lists (ibid., pp. 47-60) a hundred objects found in this cave, of which a little over sixty are fragments of clay figures. (Hallade's remarks on these pieces, are quoted at the end of note 31 of this chapter.) Even if a close future scrutiny may reveal that a certain number of these are of somewhat later date, a few can be contemporary of the architecture. In Wheeler's view "the clay and stucco sculptures of the Indo-Afghan region" fall mainly within the 2nd and the 5th centuries, see Ant., Vol. XXIII, p. 12.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

technique. The "Buddhists had already started making use of terracotta for their images even before Kushān times"[34] and there can be no doubt that such a practice came into being in the 1st century A.D. By terracotta neither the previous scholars nor do we mean the toys or even figurines; if that were the case, one has to start from the Indus Valley Civilization. But by this term the images of moderate sizes are meant as the minimum requirement and also the images meant for edification or decoration, etc.

To come to the "art of modelling in plaster", i.e. stucco, it "appears to have been introduced into India from the West by the Śakas or Parthians, most probably by the latter" in the 1st century A.D., as is evidenced by the sculptures found near the apsidal temple in Sirkap.[35]

Above observations clearly show that stone alone has not been the medium of statuary in Gandhāra in any time of its life, but other media like baked and unbaked clay, stucco, etc. have been in use for the same purpose. But the difference noticeable from the extant specimens, is the number of examples of respective media, of which stone is predominant. We may not be far from the truth, if we infer from the comparatively perishable nature of other media that this numerical difference between the stone and other specimens may not have been as great as we see it today. It must be, therefore, borne[36] in mind in the interest of the history of these materials as means of expression that these materials also, i.e. clay and stucco and techniques as baked and unbaked clay, have been in use already in the 1st century A.D. For the reason of failing to note this historical fact some writers—Fabri and Barrett—have gone, unfortunately even in recent years, to the extent of saying that clay—of course in their words terracotta—was comparatively a new comer, if not a late comer, in the field. But that it is a total distortion of the real picture, is clear

[34] Tax., Vol. II, p. 468.

[35] Tax., Vol. II, p. 513; B.A.G., pp. 27-28, 31; G. Tax., pp. 77 and 115 and A.A.I., p. 83.

[36] This is all the more important in view of the divergent opinions expressed by scholars. Foucher, for instance, says that no clay image or stucco dating from before the 3rd century A.D. has been found (V.R.I.B.T., Vol. II, p. 345). When stating this he does not seem to distinguish Gandhāra from Taxila, as Marshall presumably does; on the contrary he speaks, as is clear from the context, of the Gandhāra school as a whole, in its old sense.

Marshall too unfortunately makes a statement (B.A.G., p. 109) in an ambiguous way, meaning apparently the same, which runs thus: "not a single figure in any of these materials", i.e. "clay and terracotta" "which is referable to this Early School", i.e. Gandhāran school, "has survived throughout the length and breadth of Gandhāra". When he makes this and similar statement in G. Tax. (pp. 169-170), he seems to distinguish, for the time being, Taxila and Gandhāra according to ancient geographical connotation. Otherwise these remarks would be contradictory to the facts stated elsewhere by himself, to which references are given in notes 32 and 34 of this chapter. Whatever may be his intention while making them, they do not seem to hold water.

Above two cases are different from those two, whose views are discussed below, for the former scholars have noted the importance of clay, yet if they have made some observation as quoted above, that cannot be properly explained; maybe a slip. But the following instances are of different nature, for they do not take all the related matters into account fully in their over-enthusiasm for new theories. Fabri states (Marg, Vol. VIII/2, pp. 59-60) that clay, i.e. in his words terracotta, being "a more delicately workable material" than stucco, came into vogue from the 6th century A.D. onwards that too as a consequent on the use of the latter. What he says in the same context about stucco and stone, is not only clumsy but also too erroneous. We need not,

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

enough from the various matters discussed above. These writers even consider that the emergence of "terracotta" marks a new tendency creating a separate period which commences from the 6th century A.D. and, which thus constitutes the last phase of Gandhāran art (in its old sense). At this juncture we should ask ourselves the following question. Has clay—irrespective of whether it has been used in baked or unbaked technique—occupied a dominant position over the stucco or stone at any time in the entire span of over seven hundred years of Gandhāran and Indo-Afghan schools together? Our present knowledge, or

however, go into those details. This much is our present interest to note that he makes this observation in connection with so-called terracottas of Ushkar (if not also of Akhnur), in which context he makes a pointed reference to Taxila terracottas. Here lies a more contradiction, for terracottas—to use the word hitherto prevalent——belonging to various periods from the 1st century onwards are reported from Taxila by the archaeologists. It is pointed out already that the whole lot of figures reported from Taxila to be terracottas is to be re-examined. If that were the case with them, there are more definite factors, as already stressed, indicating that at least a great part of images of Akhnur and Ushkar were originally unbaked clay figures.

Whether or not Barrett was influenced by Fabri's theory is a different matter, but he too makes similar observations in connection with the "terracottas", which he thinks to belong to Shāhi period and infers to have come from Shāh-jī-ki-Ḍherī or from some other place in the North-West India. Barrett believes (O.A., Vol. III/2, p. 58, column 1) that "the final development of the Romano-Buddhist school was exclusively in the new plastic medium", i.e. terracotta, and at the same time he holds it probable that "this terracotta style existed at intermediate stations between the most westerly province of the Shāhi kingdom and Kashmir" and not throughout the regions. But as to the factors leading to this development he is not sure, when he says (ibid., p. 57, column 2) that "whether we believe it was a logical development from the Taxila terracotta or Hadda stucco styles, or was due to the influence of Central Asia." Although this view does not ignore the "terracottas" of Taxila, as much as the previous theory, this too certainly fails to recognize their importance. What clearly indicate the observations of both the writers, is that the "terracotta" makes a new period and accordingly we will have a stone- stucco- and terracotta- periods in the art of Gandhāra of old sense, following successively one after the other in the same sequence. Whether this assumption of the periods is tenable or not, is a question which depends very much on the problem whether all the figures hitherto reported to be terracottas — including those discussed by these two writers — were originally terracottas. Whatever the fate of this question may be, one assumption worked at the back of their minds, though untold categorically, that the clay was a new comer in the media employed in Gandhāran and Indo-Afghan schools. The following should be taken into account in connection with their claim that "terracotta" forms a new epoch.

True, we have Fondukistan, where the excavation yielded mostly unbaked clay images (but not terracottas as Barrett erroneously took them, ibid.). But apart from the fact that this site is moderate in size, we have yet no knowledge of the second site of its kind. If some "terracottas" were found in Ushkar, it does not prove that it was a predominant medium there, for no serious and fullscale excavation was undertaken at this place, and as far as the exposed features are concerned, stone was also employed for the base of the *stūpa* in the fashion, and more important, in the finely dressed-up form as characteristic to the rest of the known Kāśmīrian monuments, which fact must not be overlooked in the similar discussions, although this is not precisely the example of sculptural medium. Coming to Akhnur, from here too only stray pieces of "terracottas" were collected by various persons, and no excavation took place at all. Moreover, Fabri's description of the site indicates that there is even not much scope to undertake it in future. As far as the so-called Shāhi terracottas of British Museum are concerned, even their provenance is not known for definite. It is, therefore, difficult at this stage to conclude even this much that there were isolated pockets or, to adopt Barrett's phrase, intermediate stations, where only the clay was employed for some reason or the other as the medium of statuary. It goes then without saying that it would be misleading to create new phrases and circumstances for the sheer fact that one is interested in a particular thing or dealing with a half dozen of "terracottas" or any other images. The question should remain open and if good data of such objects will come to light in the future, then only the necessary conclusions may be drawn.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

for that matter our study of unearthed material, is too insufficient to answer this question. In the circumstances it is advisable in any discussion of these schools to stick to what is known now in a relatively definite way. Accordingly, stone has been profusely employed in Gandhāran school. But this proportion has reversed from the emergence of the Indo-Afghan school and, especially from the 4th century onwards clay and stucco have dominated the scene almost to the extent of ousting the stone as sculptural medium.

REASONS FOR THE DOMINANCE OF CLAY AND STUCCO IN INDO-AFGHAN SCHOOL

According to our present knowledge of history of art, the sculpture, as far as those parts of India are concerned, has started for the first time, in the ancient land of Gandhāra and in the regions lying near it, besides Taxila, etc. situated at the other, viz. eastern side of Sindhu river. It has also remained confined to those regions. In many parts of this area a type of stone—a kind of schist either with black or with slightly bluish tint—somewhat suitable for carving is available. Even though such a stone is not available near Taxila and its surroundings, this might have been brought from quarries in neighbouring tracts. Since the appearance of the Indo-Afghan school the art movement has not any more been confined to the regions where the Gandhāra school flourished, but has spread to far away areas and, in many of such areas suitable stone is not within easy reach. Hence it is assumed that this material condition leads the artists to adopt media—clay and stucco—which are at hand in abundance.[37] Although this assumption may be rational and undeniable in the case of some tracts of these vast regions, the material condition cannot *always* be taken as a criterion as is proved by the very fact that these media have been profusely used in the Gandhāra of ancient geographical sense, in which the schist is available, which has been used abundantly earlier for more than two centuries. Consequently there must have been other reasons also for this development.

It has been suggested[38] that one of such reasons is a great demand for images from the ever increasing number of religious establishments, a demand which could not have been met as quickly as necessary, if all the images had been made in stone. However, let us remember that in the aesthetic sphere too clay and stucco produce effects of their own. Moreover, there has been a habitual esteem for clay in India. There may have also been other reasons for this development, though they are as yet unknown.

[37] G. Tax. pp. 37-38 and B.A.G., p. 109.

[38] See B.A.G., p. 111, where this matter is discussed, though not exactly in the same manner, as we have put it. Wheeler, too, expresses more or less the same opinion, though with reference to stucco only, see Ant., Vol. XXIII, p. 9.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

ARCHAEOLOGICAL ACCOUNT OF CLAY MODELLING

ALLIANCE OF CLAY AND STUCCO AND THE PRINCIPLE OF THEIR USE

One of the highly interesting features of the Gandhāran and Indo-Afghan statuary is that clay and stucco are employed at the same centre and on the same monument simultaneously. Neither of these materials is, however, selected indiscriminately. Clay is certainly durable as long as it is protected against water and so it is employed for images in sheltered places. On the other hand stucco is utilised in exposed areas.[39]

EMPLOYMENT OF COMBINED MEDIA AND THE SIZE AS A FACTOR FOR SELECTION OF TECHNIQUE

As the place has been chosen depending on the material—clay and stucco—so also the techniques, viz. baked and unbaked techniques are reported to have been employed according to the desired size of the images. This need not be taken to be a rigid rule, but it is a very general tendency observable among the images that came to light, which is as follows: "The smaller figures were usually of terra-cotta throughout, that is, of clay fired in a kiln. Of the larger figures, some were made entirely of sun-dried clay" (i.e. unbaked clay); "in others, the head was of terra-cotta, the rest of sun-dried clay."[40] We have already expressed our doubt, whether all those pieces reported hitherto to be terracottas, have been really or originally terracottas. The validity of above observations of archaeologists can be assessed after the re-examination of the issue. Thus having noted our reservation in this matter, we now again turn to the questions related to unbaked clay and stucco.

RELATIVE HISTORICAL IMPORTANCE OF CLAY

Marshall's general observations are of special interest, for he himself is responsible for the excavations of almost entire Taxila, which have brought a great many significant facts to light. An overall situation of his excavations at Taxila and surroundings has led him to find out the relative historical importance of clay and stucco, in which connection he observes that "clay inevitably exercised a strong influence on all classes of sculpture, whether the material employed was stone, wood, metal or stucco."[41] It should be clarified that this observation is made in connection with the examples belonging to the 4th-5th centuries A.D. and that the influence meant here is concerned with style and aesthetic appeal. We may add now that in still earlier ages clay led to certain developments related to statuary as such, for instance, the

[39] B.A.G., p. 109 and G. Tax., p. 169.

[40] Tax., Vol. II, pp. 468 and 439. The phrase, "sun-dried clay" chosen by Marshall is suitable in the case of bricks, etc., but it is misleading in the case of the clay images made with the unbaked technique, for these are dried in the air. Similary unsuitable phrase is: *earthenware sculpture* used by Hallade's translator (G.S., p. 151), as this is a term associated with the pottery.

[41] Tax., Vol. II, p. 439.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

polychromy, which in its turn brings the eye-opening ceremony (*akṣinocana*) of images and a set of terminology, etc.[42] Further, here as well as in the places which are going to be referred to below, what Marshall means by clay is unbaked clay technique. Even if it comes to that matter, the history of sculptural media indicates the same, as is proved by the archaeological evidence too. To quote Marshall again who says that from the 4th century onwards "stucco was coming to be used not only in place of stone but largely in place of clay as well."[43] This, however, should not be misunderstood as stucco ousting clay, which has never happened. But it coexists and that is one of the interesting points of these schools. The technique adopted in a great part of stuccos of all these regions amply testifies the matter that stucco has been used in the place of clay. True, different materials are employed for shaping the core of stuccos not only in these schools, but also universally and again, as a general rule, the stucco itself is employed as a binding medium of such materials. But in Indo-Afghan regions the stucco has not been used as a binding medium of cores of any stucco images. It has always been the clay itself which forms the core, either singly or with a combination of other materials — from rubble to huge masses of stone (thus there are varieties of these cores, which we have discussed with necessary references in a separate work: *Technique of Gandhāran and Indo-Afghan Stucco Images*). It is against this background one should try to assess the importance of clay and its unbaked technique in either Gandhāra or in Indo-Afghan school. As a matter of fact the clay as a sculptural medium and its unbaked technique have played a great, yet hitherto unacknowledged rôle especially in the early history of statuary in India at large and if a more archaeological evidence has come to light from Indo-Afghan regions, that is a mere accident and one example, but not a special case, for there has been a great esteem for clay and its unbaked technique in India most probably from very remote ages, as we have already elaborated the matter.[44]

TECHNIQUE OF UNBAKED CLAY IMAGES AS REVEALED BY THE ARCHAEOLOGICAL FINDS

In the modelling studios of modern art schools — organized on the lines of those of Europe — sometimes the figures of moderate sizes are executed by cutting out the excessively added bulks of clay with a tool. This does not mean that the principle of cutting out is not at all adopted in the cases of the larger sizes, but it is only a matter of degree. Thus this method involves also the principle of carving to a limited extent. This has not been the case, even till today, with the traditional way of modelling in India. Here the figures are shaped by

[42] See Section II and V of our article, *The Rôle of Polychromy in Indian Statuary*, A.A., Vol. XXIV, No. 2 (1961), pp. 118-122 and 128-131.

[43] Tax., Vol. II, p. 514.

[44] A.A., Vol. XXIV, No. 2 (1961), pp. 128-131 and in the introduction and at the beginning and the end of Chs. XII and XV respectively of this book.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

adhering to the principle of building up, though rarely tools are used only to sharpen the delicate features such as the inner borders of the nasal wings, eyelids, etc. Even if a little amount of cutting is involved in this sharpening, it is not comparable with what is mentioned above, as this cutting is not meant for executing the planes of any part of the body. The case is not different with the images belonging to Gandhāra, Indo-Afghan regions, Kāśmīr and Jammu, which are the basis of the following discussion. As the building up proceeds from within to without in the case of the round figure, we must deal with the technique accordingly. Also in all the known archaeological examples, as in the case of the technique traced in previous chapters on the literary basis, the clay modelling begins with the wooden armature and hence that would also be our starting point. It may be necessary to point out at this place that in the interest of uninterrupted treatment of the technique it seems better to put forth our arguments at the end of this account, the arguments which are meant to prove that a few of the so-called terracotta fragments included here as illustrations are not originally terracottas, as hitherto they have been known from the archaeological literature. Till then one has to take it for granted that they are unbaked clay figures.

ARMATURE

When one speaks of the armature, one should not confuse it with either wooden dowel or any type of core. The wooden dowels placed in the neck area in the case of stuccos to strengthen the joint of the head or utilized as a means of joining the separately made heads to the trunks, are also sometimes described as armature,[45] probably without justification. The cores are fashioned for stuccos in various ways (as we have discussed in a separate work, *Technique of Gandhāran and Indo-Afghan Stucco Images*) and they may be made in similar methods for the images of other materials also, but all such incidents cannot be armature in the sense of constructed frame linking different limbs of the body, for they are bulks or blocks, i.e. not frames, though in their case too the construction as such is involved.

There is evidence to establish the practice of constructing the armature with wood in the entire body, in its fullest and legitimate sense,[46] though unfortunately not many details regarding its principles of construction are known. As far as the photographs published hitherto permit us to conclude, the *śūlas* of the limbs like legs, arms and trunk are round in

[45] For example, see Str., p. 66.

[46] Dealing with the finds of Fondukistan Hackin describes the armature in the following words: "Des modelages en terre crue", ... "consolidés par des pièces de bois constituant une véritable ossature", see D.R.A.A., p. 49 and he also reports the existence of wooden armature in a figure discovered in Tépé Maranjan, see ibid., pp. 10-11. Cf. N.R.A.B., p. 47, item 1 and p. 72, item 182. What kind of word Hallade chooses in French to describe this armature is not known (for we were unable to see the French version till this moment), but her translator puts it in English as "wooden struts to support the models" (G.S., p. 158, column 2), which description does not fit in the literature on sculpture.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

shape.[47] The material at hand is too limited to draw a general conclusion with regard to the question as to whether or not the other shapes — square and octagonal — are adopted to different *śūlas*, in particular to the *vaṃśadaṇḍa*. However in the case of the last mentioned *śūla* there is something to be added. Next to the fingers (which are shaped in free positions) the neck is the weakest spot in the images made of clay, even of stucco, etc., so it is all the more necessary to bring some element in the neck area to protect it against easy breakage. Hence the extended end of the *vaṃśadaṇḍa* would serve the purpose far better than a small piece of wood like a dowel, which remains isolated without any structural link. Tarimian (East Turkistan) archaeology provides evidence in several examples (the details of which it is not the place to go into) proving our point. Even if this evidence is not accepted on the ground that the Central Asian practice shows certain aspects a little differently, it is in fact supported by the ancient textual account as explained in the previous chapters. We can have some suggestion of such device in the broken projecting wooden sticks found in the damaged neck areas of some images belonging to the regions with which we are now concerned,[48] on the basis of which we can take it for granted that the *vaṃśadaṇḍa* runs continuously upwards through the neck deep into the head portion, i.e. up to the crown. Likewise, there is evidence in some mutilated figures,[49] giving a definite idea regarding the lower extension of the *vaṃśadaṇḍa*, according to which it runs downwards almost up to the buttocks. Thus, this is one aspect of the *vaṃśadaṇḍa*, viz. its approximate total length. As to its shape, we have already explained that according to some examples it is round, but there is one more instance

[47] All the photographs referred to in this paragraph are published in D.R.A.A. In the right fore-arm of a *devatā*, Fig. 171, the *śūla* is still preserved, the end of which is seen projected; the rests of the armature or the cavities left because of its loss, seen in other images also indicate the same, see the right arm of the small Buddha in Figs., 165 and 176; the left arm of the so-called royal female image in Figs. 190 and 191. Other figures such as 179, 180, 181, etc. show the same, though these areas are covered with some material by way of conservation after the excavation. The cavity in the right upper arm of the image, Fig. 155, gives the same idea as in the right shank of the Bodhisattva in Fig. 169.

[48] The ground for forming this view is the manner in which the wood is broken in the neck areas of the images reproduced in D.R.A.A., Figs. 190 and 8 (7 being the detail of the latter). Describing the condition in which the latter is found Hackin says: "Les goujons de bois qui fixaient la tête (un simple modelage de terre) au corps avaient cédé, rongés par les insectes", etc. (see ibid., p. 10). In using the word, goujon he may not be quite precise, for by this a simple dowel is generally understood, but it is interesting to note his use of plural: goujons. It is also doubtful, though not impossible, that more than one piece of wood has existed. If some twigs are bound together and used in this place, it might have been possible to describe them to be several dowels, but the photographs do not show any bundle of twigs. It looks to us likely that owing to decay, the wood present there might have split up and looked like a group of several pieces.

The Buddha image reproduced in Figs. 163 and 164 shows a hole at the root of the neck, on the basis of which one might argue that this hole indicates the use of a dowel rather than a long piece of wood like *vaṃśadaṇḍa*. This hole need not be a strong proof to establish such a view and it might occur, if the *vaṃśadaṇḍa* breaks at the point below the root of the neck. If so, this too contributes to our assumption rather than disproving it.

[49] D.R.A.A., Fig. 191. Incidentally it may be pointed out that the cavity seen at the abdomen of the male image appears at first sight to be square, but the examination reveals that its shape is round, so we have to assume that the *vaṃśadaṇḍa* of the round shape has disappeared from this place.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

to be taken note of. The cavity caused by the loss of a probable wooden piece in the neck and head regions of one of the two Akhnur pieces reproduced here (see Fig. 28) has some, though not too well defined, angles or corners, vaguely suggesting the square (or at least hexagonal) shape of the lost wooden stick. It has been pointed out just above that such pieces cannot be simple dowels; on the contrary, they are the upper parts of the *vaṃśadaṇḍa*. If so, this cavity indicates that the *vaṃśadaṇḍas* used to be shaped, at least occasionally, also in square. Thus we can gather the information of the two varieties of the shape of the *vaṃśadaṇḍa*—round and square (or hexagonal). In spite of having evidence for the lower extension of the *vaṃśadaṇḍa* as low as the buttocks in an image in sitting posture, there is no definite proof for its being posted in the ground or seat in the images of sitting posture. Similarly, we are in want of information whether or not the *śūlas* of the legs used to be posted in the ground or pedestal in standing posture. Further, the most important aspect of this kind of armature is the method or rather methods of joining the *śūlas* at different places, but nothing is known about it. Even the question of internal frame work (i.e. *śūlas*) is left out and when the question of *upaśūla* or "support", which is external, arises very little is known. The *upaśūla* is reported to have been used at the back in the level of the chest[50] in the Indo-Afghan regions too, but nothing as yet is known about the questions related to it, such as, what is its form, whether it is always singly used or in plural number, etc.[51] This is all that we are able to gather now regarding the armature proper.

Marshall, who has excavated almost all the sites in Taxila and also many of those in Gandhāra, is totally silent on the question of armature in clay images, except making a passing reference to (Tax., Vol. I., p. 340) "the charred residue of the wooden peg" i.e. dowel as against in the case of stuccos, in which connection he repeatedly mentions it. Even no

[50] D.R.A.A. (Hackin), p. 52. A Buddha image discussed in N.R.A.B., p. 35 may be another example of this practice.

[51] The head to be discussed in this note is reported in *Taxila* to be terracotta, while in *Memoir* it is described as burnt by the accidental fire. Even if this were really terracotta, it may be referred to here, for this is meant as an example of the use of dowel. A child's head, measuring 4½″, is described in M.A.S.I., No. 7, p. 51 (Pl. XXV, d) to have a "socket hole" at its rear, but this point is not mentioned in Tax., Vol. II, p. 472, item 184. This hole suggests the former existence of a piece of some material, most likely of the wood. But it is difficult to interpret it. Considering the dimensions of the head, it may be taken for granted that the height of the child might have, if not broken, measured more or less 1½′. If it has been in the mother's lap, the latter might have been a life-size image, though this point has no bearing here. But the important point is whether the child has been in mother's lap or stood independently. If the former is the case, even a dowel would do, for it would be supported by mother's lap and the dowel in such cases works only as a link, which protects from easy detachment. Even if it has stood independently, which fact makes it necessary to have an *upaśūla*, the present information cannot lead us to infer about the place of the *upaśūla* other than at the point of chest. A small figure of this size does not require more than one *upaśūla*, in any posture other than reclining position. Since the original posture of the figure is not known, it is difficult to take it as an example of the use of more than one *upaśūla*, only on the basis of a mere fact that it has a hole at the rear of the head. But this very situation may strongly point to the condition that the child has been most probably in mother's lap.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

definite trace of it can be seen in the photographs reproduced here[51a] (which, in fact, are almost all that are to be found in the relevant albums of the Archaeological Survey of India, New Delhi with a caption indicative of material or which makes us to infer its material to be unbaked clay in its original state). If one has to base oneself on these two facts alone, one is to conclude that the practice of constructing the armature has been unknown in the Indian regions of Indo-Afghan school. For the following three reasons, however, it seems most unlikely. (1) As already noted with proper references, Hackin reports, in unambiguous terms, the prevalence of wooden armature in clay images, while dealing with the examples belonging to Tépé Maranjan, Fondukistan, etc. (2) Even if these examples are ignored, our Fig. 28, as has been already elaborated, definitely proves the practice of constructing the armature, which comes from the neighbouring region, Jammu (proper place being Akhnur) and temporally too which cannot be much later than those belonging to the Indian regions (in which the 4th and 5th centuries are more productive) of the Indo-Afghan school. (3) Further, a passage of the *Mūlasarvāstivādavinaya*, which we shall discuss in the last chapter with necessary details, speaks of the wooden armature in clay figures. Because of the close association of this text with Kāśmīr, this source suggests that this practice has been known not only in Kāśmīr but also almost in all the neighbouring regions, at least from the 2nd century A.D., if not earlier times. In view of all this we do not personally believe that this has been unknown in Gandhāran regions. Nevertheless, for the sake of argument or in the interests of precision, let us suppose that there has also been a practice of clay modelling in those regions, in which no wooden armature, in its proper sense, has been used or constructed. Then the necessity of using, to adopt a commonly

[51a] A hole is seen in the calf of the right shank of a seated Buddha image, reproduced in M.A.S.I., No. 7, Pl. XVIb and Marshall observes (p. 17) that the white ants have caused a damage. Yet we cannot conclude on this basis that the wooden armature formerly existed in it. This is for two reasons. It is not clear whether Marshall made this remark with specific reference to the Buddha image or to the group as a whole and, secondly, there is no certainty whether the white ants were at work on account of the wood inside or of the chopped straw mixed with the clay. There is another photograph giving similarly uncertain information. Two clay images, reproduced in M.A.S.I., No. 7, Pl. XIIb (our Fig. 32) stood beside a stucco group seen in Pl. XIIIb, as can be noticed from the right end of the latter, and as also indicated by Marshall (pp. 12-13). An image of the former plate, carrying the basket in the hand was removed to the Museum (in Taxila?) and published in Tax., Vol. III, Pl. 138p in the condition, in which it finds itself in the Museum. At the time of this operation the image seems to have broken at the upper region of the thighs, though somewhat remodelled before publication in the latter book, and also the area of the second figure has been further cleared up. Another photograph seems to have been made *in situ* after this work, and this is the very photograph which is of our present interest. There is a confusion in our information with regard to its precise No. of the Photo-archives and, as a result we are not sure whether it should be specified as Frontier Vol. X, I.2/1918-19 or Vol. X (?), I.1/1920-21 (or of different year). In this photograph (never published, as far our information goes) one sees a long, almost rectangular, piece of unrecognizable material, running accross the chest creating the impression of the armature, or a part of it, as if meant to serve as the base of the left forearm. But it neither actually follows the course of the said arm (as a comparison with our Fig. 32 proves) nor it has a link with any other part. It is, therefore, impossible to decide its nature and function without seeing the original, if the group or rather its traces are still preserved *in situ*.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

known term, a dowel at the neck portion may arise. In view of this and for the following reasons the dowel may be dealt with in detail at this juncture.

THE PROBLEM OF DOWEL

There is a misunderstanding about the function and nature of dowel among scholars, which leads some authors to see it as a part of the armature. While dealing not only with clay modelling or terracotta but also with stuccos, the archaeologists mention the wooden pieces — present or inferred from the cavities left after their loss — as dowels irrespective of the question whether they are found at the neck region, or at the back of the images and or even in the walls. Although the archaeologists may find the use of this term as a convenient short cut, it does not always give a clear idea of its nature and function. It is, therefore, advisable to adopt a terminology which does not give way to any ambiguity. The matter, however, should be considered in relation to different media, for the issues involved vary from one medium to the other, to some extent. Although our present task is not concerned with any medium other than the unbaked clay, it is necessary to touch issues related also to other media, in order to give some clear knowledge of the problems of unbaked clay technique.

The so-called dowel used at the back of image has a function different from that employed at the neck. The latter provides some strength to the neck portion. If it also holds the neck in position, that is not its main purpose, for the heads, if they are made separately, can be attached without it as far as clay or stucco or for that matter, any pliable medium is concerned. If it comes to stone, it works true to its literal meaning, i.e. headless pin; in other words it holds two given parts together not only in the case of the head joint but also in any joint.

If it comes to the so-called dowel to be employed at the back of image, its function differs between the unbaked clay images on the one hand and the terracottas and stuccos on the other. Its function in the case of unbaked clay images is to hold the armature in position, especially during the period of modelling. But it does not hold its core, if any, though that might also happen as an unintended purpose, nor does it link the image with the wall behind by fastening it together and by protecting against the detachment. If it has to hold the armature it should have a suitable form at the exterior end. We have seen in chapters VIII and X that according to the textual account of the technique, it has a well-calculated and definite shape, but we have yet no knowledge of this aspect from the archaeological finds. Supposing that it had no specific shape and that it used to be tied to the armature in crude methods, the fact does not change, i.e. even in that case it had no different function than holding the armature in position. Hence the term *upaśīla* supplied by the Sanskrit texts (which equals in the final meaning to modern terminology in English, viz. "support"), can be adopted to the technique as known from the archaeological finds.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

In the case of stuccos, the function of the so-called dowel employed at the back of image is to link the core of the image to the wall, if it is executed on the spot. It links the image itself to the wall, if it is made separately and attached to the wall later on; in this case, however, the images are generally small, for the obvious reason of practical difficulty, which does not arise in the case of stone figures. Thus the so-called dowel augments the adhesive quality of the material and protects against the possible danger of detachment. Here the necessity of holding core does not arise, for it remains firm during the modelling, also when there is no so-called dowel, which is not the case with the armature. That is why what it does is to link. Described in other words, it may be said as keeping the core together, but not holding it. Moreover, the *upaśūla* holds the armature not on the surface of the wall, but away from it, though the distance between the armature and the wall may vary from case to case or from tradition to tradition. This is a very important aspect in any comparative study of the techniques of various media. And the case is not different even in modern practice as seen in Bengal now, which will be discussed in the next chapter. The element to be employed at the back of images made of the material like stucco, should be differentiated from the *upaśūla* on the one hand and from the element used in the neck, etc. on the other. It seems, therefore, better to adopt the phrase "minor support", on the analogy of the *upaśūla*, in the case of stuccos, terracottas, etc.

Turning to the terracotta, it may be observed that before baking the image (or for that matter any object) the question of employing either wooden piece or even iron rod does not arise, irrespective of the question whether the image is made solid or hollowed, for the obvious reason of its disappearance in the heat of the kiln. Hence a hole should be created at an appropriate place or places of the rear of the image before baking and then a wooden piece (or a piece of any other suitable material) should be cemented in the hole as is to be done in the wall in the case of the other end, if and when an object is planned to be given an element of additional security, in the form of a dowel. The question of suspending it, does not arise in the case of bigger images or to that matter any small decorative objects, if they are to remain fixed in position permanently. Although we have no archaeological evidence, we may mention another method in this case as a possibility on the basis of common sense. An additional piece is shaped with clay in the form of a stick at a desired place and then it should be baked along with the image. This additional part can be pushed into the hole in the wall and cemented. In any case, the element to be brought at the back of terracottas does not differ from that of the stuccos, so far as the function is concerned. This too, therefore, may be named as "minor support".

Thus we distinguish the element employed at the back (or strictly speaking, the view lying towards the wall hiding from the spectator) according to the medium and thus according to the purpose. In the case of the unbaked clay images we call it *upaśūla* while in the case of stuccos and terracottas "minor support".

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

When the question of strengthening element in the neck portion comes, there may not be any great objection to the use of the term, dowel, though in many places it would not prove to be a good choice. As far as its method of employment is concerned, archaeologists tend to say that it is driven. The question of driving a dowel never arises either in the case of stuccos or terracottas or for that matter, of the unbaked clay images, if the last mentioned are modelled on the wooden armature. Such a process very much disturbs the work done previously. If the dowels are driven in the modern practice of Bengal (see Figs. 36, 37 and 39), precisely this is a point to be considered critically. Judged from many of the general features, this modern practice is derived from the one which has been elaborated in previous chapters. Nevertheless it differs inasmuch as the main bulk of the image is concerned. The rice straw forms the main bulk of the figures, and all the clay layers given on it together do not measure even an inch in thickness at several regions (see Fig. 42, the image at the right upper corner), which indicates how great the straw bulk is. This great bulk of straw allows the driving of a dowel without causing any difficulty or disturbance. Sometimes a bamboo stick is kept in the proper place while tying the straw in the form of trunk and this stick is pulled out before driving the real dowel. This enables easy driving of the real dowel. Moreover, the head is attached to the neck later on and the head proper, being a hollowed one, does not touch the dowel in any stage. These are the factors which permit driving the dowel. But when there is no material like straw inside the image, the driving of a dowel proves disastrous. Hence the word, driving should be avoided in such type of images as those coming from Indo-Afghan regions, Kāśmīr, Jammu, etc., irrespective of the question whether they are unbaked clay figures, or terracottas or else stuccos.

Again one should not misunderstand certain other practices, such as mentioned below, to be a proof of driving a dowel. A bunch of *pipal* leaves brought on the canopy of a Buddha image is described to have an octagonal socket hole.[52] This information is interesting, for it is a suggestion to the shape of dowel and thus also a clear indication for the employment of dowel. The object in question has an ornamental nature and the dowels used with such pieces are not only small in size, but also supposed to be driven into the clay coat, when still wet, generally on the surface of wall, etc. on which the decorative objects are brought. There are innumerable examples of this practice in Tarimia (East Turkistan) and they are not lacking in Indo-Afghan school either, though they are reported in connection with stucco work. This type of work is entirely different from image making, hence the method of driving dowels in this sort of work should not be considered to be a proof for the adoption of the same method in the case of the images.

When the possibility of driving the dowels is ruled out, two methods seem, from the common sense point of view, to be adoptable. The first is to keep a piece of wood or a

[52] M.A.S.I., No. 7, p. 51 and see Pl. XXV, b.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

similar material, at the proper place while modelling the trunk itself. Generally this should be, or even it might have been, of sufficient length to extend up to the heart below and almost up to the crown at the top. The second method is to create a hole of sufficient dimensions from the initial stage of modelling the trunk to permit the insertion of the dowel later on and give room for pouring in the fluid material which works as cementing factor. These two methods may be adopted to the stuccos, as we have elaborated in our work, *Technique of Gandhāran and Indo-Afghan Stucco Images*, But the first method does not work with terra-cotta for the obvious reason of baking in a tremendous heat of a kiln.

As to the unbaked clay images, we have already expressed our view that it is unlikely that clay images have been created without wooden armature. If there is a wooden armature, there is no need for any dowel, because the piece representing the vertebral column (*vaṃśadaṇḍa*) extends up to the crown and we are going to elaborate, in the proper place, the ways in which the head is either attached to it or modelled around it. Supposing there has been also a practice in which no wooden armature is made, we just point out that the two methods suggested above may be adopted. Even of these two, the first method is suitable particularly in the case of clay images and to illustrate this point two Central Asian examples may be referred to here. In Kumtura, in Kucā region, two stone cores — without the neck and head portions— of sitting Buddha figure of over life-size, were discovered, showing a wide groove, cut from the top of the trunk down almost to the heart.[53] It may be, however, mentioned here that there is no clear evidence that the clay was applied over these cores to model the bodily features. Also from nowhere else in Tarimia (East Turkistan) it is known that stone is used as core to model the image with clay. Thus these are unusual examples in Tarimia. No stucco of that size is ever discovered from the entire breadth and length of Tarimia, so it cannot also be decidedly said that these cores were utilised to model the stuccos. In spite of the lack of decisive evidence these may be taken to be cores of clay images only on the basis of the general tendency that ninety per cent, if not more, of the images from Tarimia are of clay. If this is so, these grooves indicate that not a small dowel, but a piece of wood of considerable length is employed here. With all these facts in view, we have observed earlier that the element employed in the neck portion to strengthen the joint may be called a dowel, though not always a good choice. It seems, therefore, better to mention this in many cases as a piece of wood (or of other material, as the case may be).

[53] Le Coq has published the one in L.L.O., pl. 29, facing the p. 112. This negative made by the Expedition Party is still preserved in the Photo-archives of the Museum für Indische Kunst, Berlin, its No. being: B. 1562. There are two more negatives of the same stone core, but photographed from somewhat nearer points, which bear the Nos. B. 1507 and B. 1224. The core recorded in these negatives has a cut. But the other core recorded in negative No. B. 1510, has not any cut, but a cavity on the top of the trunk, indicating the existence of a long groove or rather hole. Probably there is a second negative of this, though we are not too sure about it. In all likelihood the latter core finds itself in cave No. 3 (according to Grünwedel's counting) of the main site (Hauptanlage), but it is not (or not yet) known in which cave the former core finds itself.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

NEITHER STRAW NOR ROPES ARE REPORTED

It has been reported[54] that a bundle of straw is placed in the neck portion of some stuccos from Haḍḍa, instead of usual wooden dowel, to strengthen the joint. Except this we never come across any reference to cores of straw or reed in Indo-Afghan centres in connection with clay images — a material (reed) which is almost universally employed in Tarimia (East Turkistan or for that matter in Central Asia on the whole) and (straw) is now being used in Bengal, as will be seen in the next chapter. Apart from making the armature entirely with reeds, there is a common practice in Tarimia of constructing it with wood or even at times with twigs. Almost in every case the wooden armature is enveloped with reeds. But in the Indo-Afghan regions neither reeds are reported for covering the wooden armature in order to obtain the bulk nor any ropes are said to have been wrapped around the wooden armature, as has been the case with the tradition we traced on the basis of ancient texts originating from South India to wind the ropes made of coconut fibres, characteristically enough in that part of India. Nor any other material is reported, which can be considered to be the local substitute of any of the three materials noted above, coconut ropes, straw or reeds. The only instance for the use of ropes made of some material, hitherto known is 53 metres of Bāmiyān stucco colossus to produce the folds of drapery, to which topic we return later. The purpose of this method is somewhat different and so this cannot be taken as an example of the subject under discussion. Mantling of the wooden armature with some such material is very necessary, for it holds clay and reduces the thickness of clay layers. Otherwise clay may not stick to wood and it may fall down especially when it is dried. It appears, therefore, most probable that some kind of material has been really employed in Indo-Afghan figures, yet in course of centuries it might have got so much decayed that it escapes the notice of archaeologists. Or it is also possible that some material still exists either in decayed form or otherwise, but they have not considered it worth recording on account of their being unaware of its nature and importance or else they have not at all minutely observed it. In the circumstances we are to depend on the inference and analogy to come to a conclusion in this respect. It has been pointed out that our Fig. 28 has a hole caused by the loss of the extension of the *vaṃśadaṇḍa* and inside the left wall of the same hole two furrows of thin size — one being comparatively prominent while the other somewhat faint — are visible. These are possibly the impressions left by the ropes wound around the *vaṃśadaṇḍa* in the course of a spring. Though for the moment unfortunately we have not our own notes at the hand to give the specific references either to the numbers given in the museum to the individual figures or to the concerning negatives, certainly there are several figures from Tarimia having impressions of the reeds (in the inner parts or cavities) with which the core was prepared and those of the ropes with which the

[54] Barthoux reports this to have been found in certain examples of stuccos from Haḍḍa, vide F.H., Vol. III, p. 7.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

bundles of reeds were bound by winding them around the latter in a spring course. Since there are no impressions of the reeds or of that sort in our present illustration, we must assume that in this case the *vaṃśadaṇḍa* was made of wood, and if that is so, we must also take it for granted that the rope was wound around it. In this way we may infer that the ropes were used not only in clay figures from Jammu region but also in those of other regions under discussion. In any case this matter should be investigated further before a definite conclusion could be drawn.

PREPARATION OF CLAYS

Regarding the varieties of clay employed there is hardly any information in the archaeological literature. What the photographs, particularly our Figs. 18-24, 29-30, 32 etc. reveal is this much. A coarser and finer variety of clay is employed for the core and upper layer (or layers) respectively as can be particularly noted from the male worshipper right to the Buddha in Fig. 22 (?) and thigh portion of another image (Fig. 21) right to this donor, as is also the case with the two male worshippers in Fig. 32. Nothing can be said about the question whether these qualities are due to different types of earth or the result of different ways of preparation of the same clay. The clay employed for the core as well as for the rest of the work in the two heads from Akhnur (our Figs. 25 and 31, the originals of which we have seen), is one and the same and slightly reddish in colour. (Further details of the clay of these two figures will be touched later on.) As to the preparation of clay archaeologists simply state that chopped straw[55] and either cotton or horse-hair[56] are mixed with it. But there are some aspects worth knowing, such as (1) how many coatings of

[55] N.R.A.B., pp. 69-72, items 156, 158, 160, 165, 174, 182, 183, 185, 186 and 187; D.R.A.A. (Hackin), p. 49; Str., p. 69 and A.A.I., p. 105. Describing the clay images from Jauliān, Marshall observes (Tax., Vol. II, p. 378) that the "disolution" of the clay "is hastened by the white ants eating their way through to the straw and chaff which were mixed with it for the sake of tenacity and strength". Unfortunately and peculiarly enough he nowhere else describes this or any other ingredients of the clay. It is only from this incidental reference one has to note that the straw was mixed with the clay of the images that came from the Indian regions of the Indo-Afghan school, otherwise this fact hardly can be noticed from any archaeological account. In the same place he also says that had not the accidental fire turned the clay images into terracottas, all of them could have perished tracelessly and hence he describes this accident as lucky. Similarly, we must also consider ourselves lucky, for we have this statement of his incidentally. This is a fine example to illustrate that archaeologists failed to record even what they came to see very distinctly.

[56] Meunié reports the use of cotton (see Str., p. 69, where horse-hair is also mentioned), referring to a lecture delivered by Hackin at l'École du Louvre on the 30th November 1938. From our enquiries we came to know that unfortunately this lecture is recorded in no form. When Hackin discusses the subject in his reports he makes no mention of cotton, but only of horse-hair (see D.R.A.A., p. 49). Though we have not the opportunity of examining any piece hitherto, we believe that Meunié is right while furnishing this information, for according to our source books the cotton is added to one of the varieties of the *śarkarākalka*.

Dealing with the Central Asian art Hackin says (H.U.A., Vol. IV, livre IV, chapitre 1, p. 255) that the walls of monuments intended to be painted are at first covered with some layers of clay in which chopped straw, reeds and the hair of animals such as horse, goat and camel, are mixed. He further observes in the footnote (2) that the first of these layers is comparable to the first coat (grezo or strato grezzio, i.e. couche

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

clay are usually given, if the clay is applied in several layers, (2) whether all such layers are of one variety of clay or of different varieties, and (3) whether those recognized ingredients — straw, cotton and horse-hair — reported to have been added to clay are mixed indiscriminately with the clay irrespective of the question for which layer it is going to be employed, etc. To give these particulars is not a difficult task in the cases of those who have seen the originals and found out above-mentioned ingredients, yet no one has gone into these details. Thus it is a case which supports our allegation that several archaeologists think that the technical aspects can be disposed of very easily. But in any case an attempt may be made now to clarify some of these points to a limited extent with the help of different means.

The statements made by the archaeologists with undesirable kind of brevity, lead to the impression that mixing up the animal hair with clay is a universal practice, which we doubt very much. An example may be given here in support of this doubt. As touched already (chapter XI, note 30), Le Coq and some of his followers repeatedly propagated[57] that besides the fibres of plants and chopped straw the animal hair is mixed with clay in Tarimia (East Turkistan). This is also a very generalized statement lacking necessary study to support it. The present writer has intensely studied the Central Asian collection in Berlin Museum nearly for five years and hence can assuredly state that mixing up the animal hair with clay is confined to two or three centres in the entire Tarimia as a common practice and if it is found rarely in other centres, that is only in stray pieces; their number is so insignificant that one may not be wrong, even if one says that the use of animal hair is almost unknown in all the centres but for two or three. We believe, therefore, that most probably the case is not different also with the Indo-Afghan examples, i.e. if animal hair is found in some pieces that might be a speciality or peculiarity of some centres or of those produced in a particular period even in the case of those centres where this practice

brute) given by the Venician artists who worked in mosaics. Several points are not clear here. He says this matter in the section in which the art of Bāmiyān is explained, so doubt comes whether these observations can be true in the case of Tarimia (East Turkistan) with which also he is concerned or this is confined to Bāmiyān. Secondly, chopped straw and reeds serve the same function. If so, whether he means that both are mixed with clay at a time and place or either of these are added is not clear. The third question may have an indirect bearing on the topic with which we are concerned at this place, viz. the use of animal hair. Is this mixed with the clay used for the first layer also or is this added to the clay meant for the top layer? When he specifies as many as three animals, the hair of which is supposed to be mixed with clay, he must have a definite knowledge. From which source, then, does he draw it? When the question of clay employed for the images comes he mentions (ibid., p. 257) only chopped straw to have been mixed with it. Thus there are many uncertainties and inconsistencies with regard to the use of animal hair in the case of clay meant for image making.

Hallade derives her information obviously from the same sources quoted above, when she describes the technique of unbaked clay images (though perhaps only her translator calls them carvings) in the following way: "The poor material used for these carvings was", ...the "crude earth mixed with chopped straw and horse-hair" (G.S., p. 158, column 2).

[57] Only as for instance B.S.M., Vol. I, p. 13 and H.S.O., p. 66, footnote.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

has been noted. In short, we strongly believe that unless the future survey does prove it otherwise this practice should not be considered to be universal or common in the entire area of Indo-Afghan school.

Now it should be seen what kind of materials are added to the clay or clays meant for different layers. As can be noticed in some of the photographs published[58] by previous writers as well as in our illustrations, Figs. 18-34, there seem to have been given one to three layers on the cores; if the question of layers of the cores themselves comes, nothing is known. But so long as the photographs are the source of study, the layers are not quite always indicative of various clays or a clay prepared in various ways. What can be noticed from all these is that at least two different clays, or a clay prepared in two different ways, are employed — one for the core and the other for the rest of the work. As shall be noted, a third clay or a given variety of preparation of the same clay seems to have been employed for slip or polish, though there is more uncertainty about it. This account, though derived from the photographs, does not differ from what is known from the technique traced in earlier chapters on the one hand and that of Tarimia on the other.

Although the ancient Sanskrit texts utilized here do not speak of core, the work to be completed in three different clays — i.e. three fourth of the thickness to be modelled — may be considered to be core for the sake of convenience, with a warning that it should not be called so, for it has not such a character. In spite of the fact that three different clays are employed for this purpose in that practice, their preparation is one and the same, in which, to pick out the corresponding ingredient, chopped coconut fibres are mixed. Cotton is used in that practice too, in one of the varieties of *śarkarākalka*, with which variety one of the upper layers, though not the topmost one, is given. The purpose of adding these substances is to bind clay together. Nevertheless there is a difference. It is better to add the stronger material like coconut fibres to the clay. But it would prove itself disadvantageous in obtaining a smooth surface, especially for polychromy, when they are mixed with the clay meant for upper layers, though they serve the purpose excellently being an ingredient of the clay which fills the bulk in the form of inner layers. That is why the cotton is prescribed to be mixed with a variety of *śarkarākalka*, meant for upper layer. It does not seem unreasonable to take it for granted that the chopped straw in Indo-Afghan school is a substitute of the coconut fibres of the other account or of the South Indian practice. It would then give the clue to deduce that in Indo-Afghan school too the chopped straw is mixed with the clay to be employed for the core while the cotton or the horse-hair (or generally speaking, even the animal hair), as the case may be, with the clay intended for the upper layer or layers. The assumption that the animal hair is employed in the clay of the upper layer is based on Tarimian analogy and at the same time there is no

[58] D.R.A.A., Figs., 153, 170, 173, 184, 187 and especially the male image in Fig. 191.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

reason for considering that the cotton and the animal hair are together mixed with it; hence the conclusion that only one of them is added. As will be discussed, some figures give the look of having a thin fine coating for polish, in short a slip. But it is next to impossibility to make out its details or discover anything from the photographs. In spite of this deduction there are certain points to be taken note of here.

It has been already stated that the entire archaeological literature provides no account of clay or clays. But a little information may be added here. Our two figures: 25 (26, 27 and 28 being the different views of the same, i.e. Pls. XII and XIII) and 31 (Pl. XV) coming from Akhnur (Jammu), are made of reddish clay throughout, i.e. the clay applied for core as well as for modelling the features is the same. If the core looks slightly coarser, that may be on account of the methods adopted in preparing the respective clays, for instance, if some amount of sand is added, the same clay may appear a bit coarser. No additional clay is applied as slip; the smoothening of the surface does not seem to have been made by any additional work or effort. If at all there has been such an attempt, the polishing might have been effected by some other means, say, for example, by rubbing the surface gently with somewhat wet fingers. In fact the glazing effect in these figures is not so much as seen in others, Cf. Figs. 31 and 33 or 34. Perhaps the reason for this is that these are most likely the casts taken from the moulds, about which we shall discuss later. Nevertheless, there is some shining effect throughout, which does not seem to be the result of some material added to clay; maybe, that the clay originally contained some percentage of mica, which might even explain the reddish tint of the clay. Most probably this reddish tint is not a result of the heat these pieces have received in accidental firing. But the amazing fact is, no fibrous material like cotton in the clay of upper layer is seen, nor the chopped straw nor else its kind is added to the clay of core. This absence need not be accounted for accidental firing, for in that case there could have remained traces, of course not of cotton, but of at least chopped straw in the core portion, either in the burnt form or in the form of grooves or depressions left on account of their loss, as often can be found in Tarimian examples which have become the victims of such accident, though this sort of happening rarely comes to be noticed. This is the condition seen not only in photographs, but also in the originals.[59] As to the examples belonging to the Indian regions proper of Indo-Afghan school, such as Taxila, Jauliān, etc. Marshall nowhere records any ingredients added to clay of any layer, except referring to the chopped straw incidentally (see note 55 of this Ch.); nor do the photographs reproduced here reveal such material, though there are several broken parts showing the inner condition of the images. It is not that the practice of add-

[59] These two pieces are in the show case in the permanent exhibition hall of the Indian Museum, Calcutta and the concerning members of the staff of the museum were kind enough, on our request, to take them out for a while and to allow us to examine. Above remarks are based on this observation for a brief time and we do not know if a close scrutiny or microscopic or similar test would reveal something else in this regard.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

ing chopped straw is unknown in these regions, because the clay with which many walls of monasteries, etc. are faced is reported to contain some amount of chopped straw.[60] The question, therefore, should be left for future investigations instead of concluding something on the basis of present inadequate data; and in fact, a number of new points may be discovered even from those pieces already unearthed, if a detailed study of the originals is made and some necessary tests are conducted on them.

METHOD OF APPLICATION OF CLAY

With the exception of those of very small dimensions the clay figures of any other sizes, especially the larger ones, cannot be fashioned by using the entire clay all at once, if they are meant for permanent purposes. So, in building them, one is bound to wait until the previous layer is dried before applying another one; this matter is unquestionable. In this respect too the archaeological literature is hardly of any help. However, the photographs reproduced here — especially the different views of one of the two Akhnur heads, Figs. 25-28 — reveal, not all the details of course, but certainly quite a number of them, that too which we ourselves were unable to imagine until we saw these objects.

At the outset it may be pointed out that according to the technique dealt with in previous chapters actually there is no core as such. Even if the bulk to be worked out with three varieties of clay, is considered to be so for the sake of convenience, it is not made all at once but in several layers, though each layer varies in its thickness at places depending on the muscular situation of different regions of the body. Thus within the core itself there would be several layers. Such a method can be discovered in some of the early specimens of the bodies of Tarimia, though there is some difference too, but it is not the place to go into these details. If one is allowed to judge from the heads found in Tarimia the core seems to have been made in a majority of cases by applying the entire amount of clay at a time not only in later specimens but also in early ones, although these may not be as early as the bodies, to which a mention is made above. These points may help the proper assessment of the clay images from Jammu, Kāśmīr, Gandhāra and Indo-Afghan regions, irrespective of the question whether they are already brought to light or will be discovered.

As far as the cores of the bodies, except the heads, are concerned, hardly anything could be made out from our Figs. 21, 22 (?) and 32, although there are several broken bodies in them. We can just see the broken parts as shapeless masses of clay, but it would be too hasty to interpret this condition as indicative of the matter that these bodies are executed in one bulk, i.e. without layers. This can be realised at once, when it is noted in what a friable state they are,

[60] G. Tax., pp. 48 and 140.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

which is most probably a result of two factors: the clay or clays employed are of bad variety originally lacking binding element and secondly, the bad or indifferent way of preparation of the material. This is the case not only with these few examples but also with most of those stuccos coming from the Indian regions of Indo-Afghan school; this would at once be clear, if a comparison between the stucco (material) used in Haḍḍa and the Gandhāran regions, is made. This leads to the conclusion that the material — clay or even stucco — employed in these regions is usually of inferior quality. In spite of this confused state observable in a majority of the photographs there are a few specimens to provide some ground for inference. From certain pictures, in particular our Fig. 18, it seems pretty certain that there has been a general tendency to fashion a well defined core, well defined in the sense that it would be an approximation of what follows in the final shape minus finer features. We can notice in the same illustration that a patch or a big chip came off from the upper part of the trunk — in a rather triangular shape from the deltoid region of the left arm to the right shoulder — which reveals the flat surface or shape of the inner area. Now the question is whether this chip came off following the course of layers applied or this is a mere accidental happening without any reason behind it. The same feature can also be seen in the region of stomach in Fig. 19. Here the flatness is more clear and it has also some pricks. In this case arises a different question, viz. whether these were made intentionally by the modeller or they are the result of the accident that destroyed the image. If the former is the case it proves that the core was fashioned at the initial stages in a flat shape and then the pricks were effected so that the next layer adheres onto it well. When this assumption (based on many "if" clauses) is correct, one should observe that the modelling of the core has proceeded from the flat shape to the desired degree of roundness in successive layers. This procedure seems to have been adopted in the case of the trunk or similar regions, but not in the case of each and every area, as an image in Pl. IX suggests. The image in question is the one that stands at the rear of the niche in the corner right to the Buddha's figure. (Its details, about which we are discussing, are more clearly seen in a close-up photograph published by Marshall, see Tax., Vol. III, Pl. 78a.) One or two clay layers of the upper right arm and of the lower left arm, fell down and as a result the remaining masses give the impression of their being the parts of the armature, but in reality they are not the parts of the armature, although the possibility of their having some support of wood or even of any other material inside, cannot be ruled out; that question should be left out now. The round masses as they appear now are nothing but of clay. When the remaining masses and the lost layers are considered, they indicate, if not prove, that the modelling of the core of these parts has proceeded all along in the round shape. Nothing more than this can be said for the present about the way of modelling the core of the body, except the head. One has to wait, if the archaeologists are willing to pay more attention to this and similar aspects in future excavations and throw more light on the problem.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

Coming to the core of the heads, we have here three specimens, Figs. 28, 29 and 30, showing the inner part of the heads. Of these the Fig. 29, being made of the same friable clay, was broken in such a way that no necessary details of core are visible. Fig. 30 too, though remarkable in several ways, was destroyed in such a way that this reveals no details of the building up of the core. Lastly, the Fig. 28 is the only one — photographed to show the cross section of the joint between the neck and the head — that gives a detailed idea. Here the core is modelled all at a time, i.e. without layers, around a wooden stick — supposedly the upper part of the *vaṃśadaṇḍa* — now lost leaving a cavity in its place. But it is difficult to conclude, basing oneself only on this example, whether it has been a general practice or confined to some specimens only. The latter possibility cannot be ruled out in view of its small size (entire fragment being 18.2 cm in height). The head at least, if not also the entire body, is in the round, though the image originally is supposed to stand against a wall, as can also be made out from the fact that in spite of adding the masses of clay to make the image rounder, neither bodily nor ornamental details have been executed at the rear. Some of the Tarimian clay heads, including cores, are flat at the rear; nevertheless, the total effect produced by certain ways of treating different items, is that of a round figure. This seems the common feature of this type of clay modelling irrespective of the region or land to which it belongs. It would be useful to recall the fact to mind that our ancient Sanskrit sources prohibit, even threateningly, the making of the unbaked clay images in relief (*ardhacitra*). In keeping with the round shape of the head, the core also is formed in the round, though its front portion has double the thickness, if not more, than the rear area. This too is in keeping with the anatomy. After all, the lost wooden stick is supposed to represent the *vaṃśadaṇḍa*, vertebral column, which lies towards the back of the neck and, moreover, there is a projection of the chin too. Technically speaking, it is not necessary to bring the vertebral column, i.e. the wooden stick representing it, at the back of the neck exactly as in the nature, and on the other hand, it can also be so arranged that it falls more or less at the centre of the throat. Nevertheless, it can never be in the central region of the head on account of the projection of the chin from the throat. So much for the core.

From the common sense point of view there cannot be any fixed rule in connection with the number of coatings or layers to be given over the core (which is made of clay itself) in order to model the features and thus to finish the image. Nevertheless, a few norms might have been in vogue, but in this case too the archaeological literature is of no help; so the only source on which we have to depend at present is the few photographs reproduced here. The images in the Buddha group — our Figs. 21 and 22 (?) — particularly the trunk of the male worshipper right to the Buddha, give the impression that only one layer is coated over the core, which is also polished. But this seems unlikely from the right shoulder and the breast regions of the *devatā* right to the Buddha in the upper row, from

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

where the top layer came off, and the area there shows a clean modelling. Whatever may be the case with it, the fact that apart from the very thin top layer meant for polishing, there is one more coating over the core. It is clear from the left corner of the lower ends of the garments of the two images in our Fig. 32 and the same is also to be found near the root of the right eyebrow and on the right side of the nose of the head in our Fig. 29. Thus here we have the examples of two layers. Our Fig. 30 is remarkable in many ways. Here there is apparently no layer meant for polishing, with the thickness easily visible, but this does not mean that it lacks polishing. From certain places, as the area below the right eye, left templar region, etc. it seems — if the light conditions of the photograph do not create any illusion — that a thin wash of the clay in liquid form is given and then polished. A well-defined layer of varying thickness according to the needs of form or modelling is clearly visible on the forehead. But there is also another layer below it, as can be made out from the planes near as well as on the nose. In all likelihood it is this layer along which the turban or headdress is made. Here too, there are two layers on the core and if the final polishing wash is included, then there are three layers. Thus we can conclude that there are two norms in applying the final coatings of the clay. One is that the features are brought out in one single layer given on the core, while the second layer applied on the first layer is mainly meant for polishing. The second norm is that instead of one layer, two coatings are given to work out the features gradually, on which a wash of clay in liquid form (and alternatively perhaps a thin coat even?) is given. By features we meant the finer bodily details, as the shape of every individual region of the body cannot be executed in one or two thin coats of the clay. Hence it is necessary to note the procedure of modelling as far as our illustrations permit. One should not misunderstand core to be a simple heaped up lumps of clay, for after all it is meant to serve as a base for an object having a definite shape. So it goes without saying that it is to be fashioned keeping the final shape of the object in view. In other words it is formed with the necessary recesses and projections in keeping with the shape of the image. Thus we see in our Fig. 30 that the depressions of the eye sockets as well as the projection of the nose are brought out in the core itself in a well calculated way. It is on such well-fashioned core that further coat or coats of clay are given to bring the features. Again it is in this layer or layers that not only the bodily features but also the delicate details of the drapery, etc. are executed, as may be noted, particularly in the lower part of the garment of the front image in our Fig. 32, where the folds are executed in the form of incised lines or in low depressions or grooves. It is also clear from that very place that such details are simply maintained in the final thin layer meant for polishing but not done for the first time. This applies to such details as may be seen in the form of incised lines at the outer borders of nasal wings or eyelids, etc. which are meant for defining the given features clearly.[61] Such lines are seen,

[61] In connection with the stuccos Marshall says (Tax., Vol. II, p. 516) that incised lines defining the "nostrils"

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

though not too clearly, at the right nasal wing of our Figs. 33 and 34 (if these lines are seen more distinctly in our Figs. 25 and 31, they are left purposely, for those pieces are most probably the examples of casting rather than modelling. Of course the casting too ultimately proves the same, because the mould cannot be made without modelling the given object at first).

CAST HEADS AND THE PROBLEM OF THEIR ATTACHMENT

This is the stage in the course of modelling when the question of casting the heads comes, if such a method is adopted. At the outset of this topic it may be underlined that the use of mould as such, is not a sign of decadence or inefficiency on the part of the artist, as some people tend to believe, but it is a matter of convenience in certain circumstances, such as the need for a quick production and the multiplication of the same thing in a comparatively short period. As a matter of fact, it is this kind of circumstances that lead to taking recourse to the mould, if not also its invention. The only effect that cannot most probably be avoided from the use of this mechanical aid is some amount of hardness and a different texture. Hence the mould should not be viewed sceptically from the very beginning, unless there are special reasons for considering it in that way in a given place and time. Several moulds, made in stucco were discovered in Tarimia (East Turkistan) by several expedition parties, notably by the German party and these moulds are of varying objects, including different individual limbs of the human body. These unfortunately lead several scholars to assess the Tarimian sculpture in an unhappy way, but it is Le Coq who made a bad propaganda, for he found in this fact a short cut to his avowed theory which seeks to make the Tarimian art an offshoot of "Hellenistic" art. This is not the place to go into these details, but it is a warning to those who are interested also in the study of Gandhāran or Indo-Afghan statuary. There is much talk over the use of mould in connection with the Indo-Afghan stuccos and to some extent, this talk is not without justification. At the same time it should be noted that much of it is an inference based on the similarity of the heads and certain motives repeated quite frequently. But the moulds discovered in all these sites are quite insignificant in every sense, in number, in size, and in importance too. Of course unless other circumstantial evidence comes to assist, it is difficult to decide whether a mould found in excavations was used to cast in stucco or in clay, etc., when

(nasal wings or alae) are pressed with a tool on the slip (i.e. after it has been coated) when the underlying layer has been still wet. But it is not a common practice even in stucco to apply either slip or any other coat while the previous one is wet, though usually water is sprinkled on completely dried coat before further layer is applied on it. But, if the stucco is once dried out, the sprinkled water does not turn it so soft as to take the line impressed on a new layer on it. Even in stucco, if different layers are applied all at once and the details like lines are impressed in such a wet condition, that may not lead to a neat and clean work. On account of its somewhat hard nature even such a procedure is possible in stucco, that should not be adopted to the clay, for in that case it leads to dirtiness. In fact that is not a procedure at all in the case of the clay, the layers of which are applied at a considerable intervals of the time.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

the mould itself was made of stucco. But if the moulds are meant to produce figurines or plaques or tablets, the nature of moulds can be noted at once from their very form, irrespective of the question whether the figures cast from them are to be baked or left unbaked. It is this latter type of moulds, though few in number, which have been discovered from Taxila and other Indian archaeological sites. Then in the interest of the precise knowledge of the actual situation, it should also be noted that among the moulds hitherto discovered, there is none which is definitely known to have been associated with the unbaked clay modelling. But this need not necessarily mean that the moulds have not been in use with the unbaked technique in these regions and on the contrary, there are certain things on the basis of which we can fairly conclude that the moulds have been employed in this connection too.

Unless the figures are small, the piece moulds, i.e. those meant for the individual limbs of the body are impracticable in unbaked clay technique and it goes without saying that it is not at all possible to use them for different limbs in the case of the images or technique in which an armature exists in all the limbs, in which case the exception being the head, hair locks, ornaments and similar things. To cast the head in the round and in solid form as one piece or in two halves is technically either an impossible task or disadvantageous in attaching it to the trunk.[62] Moreover, no evidence, even of the indirect nature, has come to light to indicate the use of mould for the entire head, which is also the case with the Tarimian practice (with the exception of small heads which are to be cast in two halves). The indirect evidence that we have is only for casting the mask of the face and ornaments, etc.

In connection with casting the mask of the face of stucco images Foucher and Marshall express the view that in spite of this mechanical device the faces in the Indo-Afghan school have more artistic value and proportionate depth than in Central Asian examples, because the Indo-Afghan artists are satisfied by obtaining just the mask without the ears and hair included in it, whereas the Central Asian modellers have included the hair in it, which results in flatness. But they are not correct in their assessment of the Central Asian method, which we have discussed elsewhere in detail.[63] In spite of including the ears and some part of hair or skull portion, the face does not necessarily get flattened. This is well proved from our Fig. 52, belonging to the modern practice and comprising both these items. It depends how one manages or what type of the hairdress it includes. The difference that results in this type of moulding is that the ears may not stand with the natural angle. With this clarification one of the two heads from Akhnur (our Figs. 25-28) may be referred to now to illustrate

[62] In the modern practice to be dealt with in the next chapter a hollowed head modelled throughout by hand is attached to the neck, and that those images are meant for the worship for a few days makes such a method adoptable. Moreover, that is a head in the round. Hence no analogy need be drawn in this respect.

[63] Cf. similar context in our monograph, T.G.I.S. For Foucher's remarks, vide M.A.S.I., No. 7, pp. 23-24, while for Marshall's observations, see Tax., Vol. II, p. 517.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

though not too clearly, at the right nasal wing of our Figs. 33 and 34 (if these lines are seen more distinctly in our Figs. 25 and 31, they are left purposely, for those pieces are most probably the examples of casting rather than modelling. Of course the casting too ultimately proves the same, because the mould cannot be made without modelling the given object at first).

CAST HEADS AND THE PROBLEM OF THEIR ATTACHMENT

This is the stage in the course of modelling when the question of casting the heads comes, if such a method is adopted. At the outset of this topic it may be underlined that the use of mould as such, is not a sign of decadence or inefficiency on the part of the artist, as some people tend to believe, but it is a matter of convenience in certain circumstances, such as the need for a quick production and the multiplication of the same thing in a comparatively short period. As a matter of fact, it is this kind of circumstances that lead to taking recourse to the mould, if not also its invention. The only effect that cannot most probably be avoided from the use of this mechanical aid is some amount of hardness and a different texture. Hence the mould should not be viewed sceptically from the very beginning, unless there are special reasons for considering it in that way in a given place and time. Several moulds, made in stucco were discovered in Tarimia (East Turkistan) by several expedition parties, notably by the German party and these moulds are of varying objects, including different individual limbs of the human body. These unfortunately lead several scholars to assess the Tarimian sculpture in an unhappy way, but it is Le Coq who made a bad propaganda, for he found in this fact a short cut to his avowed theory which seeks to make the Tarimian art an offshoot of "Hellenistic" art. This is not the place to go into these details, but it is a warning to those who are interested also in the study of Gandhāran or Indo-Afghan statuary. There is much talk over the use of mould in connection with the Indo-Afghan stuccos and to some extent, this talk is not without justification. At the same time it should be noted that much of it is an inference based on the similarity of the heads and certain motives repeated quite frequently. But the moulds discovered in all these sites are quite insignificant in every sense, in number, in size, and in importance too. Of course unless other circumstantial evidence comes to assist, it is difficult to decide whether a mould found in excavations was used to cast in stucco or in clay, etc., when

(nasal wings or alae) are pressed with a tool on the slip (i.e. after it has been coated) when the underlying layer has been still wet. But it is not a common practice even in stucco to apply either slip or any other coat while the previous one is wet, though usually water is sprinkled on completely dried coat before further layer is applied on it. But, if the stucco is once dried out, the sprinkled water does not turn it so soft as to take the line impressed on a new layer on it. Even in stucco, if different layers are applied all at once and the details like lines are impressed in such a wet condition, that may not lead to a neat and clean work. On account of its somewhat hard nature even such a procedure is possible in stucco, that should not be adopted to the clay, for in that case it leads to dirtiness. In fact that is not a procedure at all in the case of the clay, the layers of which are applied at a considerable intervals of the time.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

the mould itself was made of stucco. But if the moulds are meant to produce figurines or plaques or tablets, the nature of moulds can be noted at once from their very form, irrespective of the question whether the figures cast from them are to be baked or left unbaked. It is this latter type of moulds, though few in number, which have been discovered from Taxila and other Indian archaeological sites. Then in the interest of the precise knowledge of the actual situation, it should also be noted that among the moulds hitherto discovered, there is none which is definitely known to have been associated with the unbaked clay modelling. But this need not necessarily mean that the moulds have not been in use with the unbaked technique in these regions and on the contrary, there are certain things on the basis of which we can fairly conclude that the moulds have been employed in this connection too.

Unless the figures are small, the piece moulds, i.e. those meant for the individual limbs of the body are impracticable in unbaked clay technique and it goes without saying that it is not at all possible to use them for different limbs in the case of the images or technique in which an armature exists in all the limbs, in which case the exception being the head, hair locks, ornaments and similar things. To cast the head in the round and in solid form as one piece or in two halves is technically either an impossible task or disadvantageous in attaching it to the trunk.[62] Moreover, no evidence, even of the indirect nature, has come to light to indicate the use of mould for the entire head, which is also the case with the Tarimian practice (with the exception of small heads which are to be cast in two halves). The indirect evidence that we have is only for casting the mask of the face and ornaments, etc.

In connection with casting the mask of the face of stucco images Foucher and Marshall express the view that in spite of this mechanical device the faces in the Indo-Afghan school have more artistic value and proportionate depth than in Central Asian examples, because the Indo-Afghan artists are satisfied by obtaining just the mask without the ears and hair included in it, whereas the Central Asian modellers have included the hair in it, which results in flatness. But they are not correct in their assessment of the Central Asian method, which we have discussed elsewhere in detail.[63] In spite of including the ears and some part of hair or skull portion, the face does not necessarily get flattened. This is well proved from our Fig. 52, belonging to the modern practice and comprising both these items. It depends how one manages or what type of the hairdress it includes. The difference that results in this type of moulding is that the ears may not stand with the natural angle. With this clarification one of the two heads from Akhnur (our Figs. 25-28) may be referred to now to illustrate

[62] In the modern practice to be dealt with in the next chapter a hollowed head modelled throughout by hand is attached to the neck, and that those images are meant for the worship for a few days makes such a method adoptable. Moreover, that is a head in the round. Hence no analogy need be drawn in this respect.

[63] Cf. similar context in our monograph, T.G.I.S. For Foucher's remarks, vide M.A.S.I., No. 7, pp. 23-24, while for Marshall's observations, see Tax., Vol. II, p. 517.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

the technique of cast mask. The greater thickness at the rear area of the double chin, which gradually tapers at both sides almost equally (see Fig. 28) suggests that the mask is a cast. But two factors speak against it: one is the absence of any layer, however thin it may be, between the core and mask, and the second is its tight fitting on the core. The clearly defined features (see Figs. 25 and 26) also may similarly negate this assumption, but there are again two factors to support it, viz. slightly hard appearance of the face (see Fig. 25) as well as the very compressed form of the double chin area (see Fig. 28) as against the core. There is a great likelihood that it is a cast mask. If it can be a cast, the other head from the same place, our Fig. 31 may also be taken, on the analogy of its slightly hard appearance, to be a cast mask. It is likely that this hard appearance is partly due to the kind of clay employed, nonetheless that it undoubtedly has some amount of hardness is clear from a comparison with the other two heads in the same plate (XV, Figs. 33 and 34). Whatever may be the reality, the front part of the female head (viz. Fig. 25) has the shape of a cast mask when looked at from the cross section (Fig. 28). Hence the procedure and the method of shaping the head with a cast mask can be explained with the help of it.

When the modelling reaches the stage more or less similar to that seen in Fig. 8 or even 9, the work should not be carried out any more on the head and neck regions. But when the bodily details have been finished approximately, a necessary amount of clay rather in a somewhat thin form may be added in the rear cavity of the cast mask and the mask may then be pressed to the core (similar as in Fig. 8) previously worked out and by the time it got dried. When the mask is thus brought on the proper place and in correct position, the modelling of the neck and the rear part of the head may be carried out so as the edges of the sides of the mask would be nowhere — in the region of the crown or the skull, of the ears and the double chin — visible separately and the lower part of the neck forms the unity with the trunk. Thus the questions of using a dowel and its morticing do not arise in the unbaked clay technique, for there is an extension of the *vaṃśadaṇḍa* to give the support to the neck and head regions. This can be also true in a majority of stuccos, for this method can be adopted easily by placing a long stick in the trunk while constructing its core.

In view of the prevailing confusion about the casting in connection with the head, above discussion may be summed up in points. Firstly, no mould is found in the Indo-Afghan regions with any circumstantial evidence associating it with the clay technique. Secondly, the use of mould is, therefore, an inference based on certain features observable in the actual products. Thirdly, in unbaked clay technique casting is meant for the mask of the face only, besides certain minor items like the hair locks, ornaments, etc., because the casting in any other manner creates trouble, as can be imagined from the common sense point of view and as can also be concluded from the several moulds discovered in Central Asia. Fourthly, the cast mask is pressed with the help of clay to the core of the head al-

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

ready made. Fifthly, in unbaked technique neither morticing is possible nor there is any necessity for dowel as such, for there is the upper part of the *vaṃśadaṇḍa* to give the support to the neck as well as the head region.

WAYS OF FASHIONING ORNAMENTS AND SIMILAR ITEMS

When the general modelling of the figure is over — in any method, namely either by modelling the head or by casting the mask — the stage comes to fashion the minor or even minute details such as, the locks of hair, ornaments, etc. Here there are two possibilities — the first is to make them by hand in their own places and the second is to make them separately at first and then paste them in the proper places later on — the latter being also known as *appliquée* method. The details mentioned here are known as *upāṅgas* according to the terminology adopted in our source books (Ch. XI, Application of the *śarkarākalka*). There is no mention at all, in those Sanskrit works, of either pasting or of casting, which is an obvious indication that even these details should be fashioned in the very places to which they belong. On the contrary, there is ample evidence suggesting that the *appliquée* method is quite frequently adopted in Indo-Afghan regions, as is the case with the Tarimian statuary. There are, however, a few examples of Indo-Afghan school, in which the former method can be inferred to have been practised,[64] for instance, the hair, excluding the knot at the top, of the Fig. 29 and the half-cut-out beads in the turban border of the Fig. 30.

The latter figure being highly interesting, the further details of it may be discussed here. From the sharp edge of the turban border it appears that it might have been cut with a sharp-edged instrument like knife or the one made by wood or bamboo, which might have been more or less similar to the one found in our Fig. 43. This groove is made to push the beginnings of the beads into it in order to create the impression that they are coming out from inside the turban to hang on the forehead, otherwise this effect cannot be brought out. In spite of the fact that they are coming out of the turban, they need not be considered to be the hair locks, for they have no such suggestion, except two of those seen at the region of the left ear. This is suggested not only by their shape but also by the fact that it is most unlikely that the beads hang so low while the border of the turban is above the ear level. The second one with uncut end and hanging on the left templar region is, however, a bead. This method of working is suggested here as a possible alter-

[64] The irregularity and clumsiness noticeable in the arrangement of the hair in Fig. 29, suggest that it is modelled by hand on the head itself. It is a work of inefficient hand and the clumsiness might have occurred, even if such a hand had taken the recourse to the mould, but in that case the texture and feeling would have been different. Cf. D.R.A.A., Figs. 155 and 180. These examples give the impression that the details are worked out in their places. Further see Mg. Vol. VIII, No. 2, p. 53, Fig. 1; p. 55, two Buddha Figs. with No. 17 and Fig. 13 (so called "Helmeted Man"); p. 58, Fig. 2; p. 59, Fig. 16 two heads of top row and the second in the lower row; p. 60, Fig. 15 a great part of the hair-dress of the left female head, etc.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

native. But we are personally strongly inclined to believe that it is executed in the following way. A great part of the turban is modelled along with the underlying coat of the clay, i.e. one of the two coats with which the face is executed over the core. Then the upper layer (not the clay wash meant for polishing) is given, as may be suggested by the appearance of the layers at the upper part of the forehead on the left side, i.e. just at the front of the beginning of the left templar region, but no coat is given on the turban at this stage. Then slightly elongated beads of varying sizes are pasted after they have been rolled out separately by the fingers. When all these are properly arranged, a thin sheet of clay is laid over them and pressed so that it works as a border of the turban and at the same time the lines are drawn on it to give the impression of the folds of the cloth. Now a sharp-edged instrument is used to cut out the ends of some of the beads. This cutting goes unhesitatingly. The shape of beads, this sharp cutting, etc. are the factors leading to consider these details to have been executed in their places. The workmanship is of such an excellent nature that it is impossible to resist the temptation of describing its aesthetic qualities even in a book dealing purely with technique. The core as well as each layer is made with precision. Planes are clean; the arrangement and relative sizes of beads match with the area they lie. The size of the turban is proportionate to the forehead. The hair locks at the region of the ear along with the bead on the temple create a rhythm. In spite of the wide forehead and wider planes of the upper ridges of the eye sockets, the features, though destroyed greatly, betray that the head is of a female figure. This head might have been very cheerful and attractive with its slanting eyes, the lids of which are less opened, though the question remains whether or not it perfectly matched with the rest of the body, as is not often the case in Gandhāran school, where the bodies are the vehicles of the face, i.e. a portrait, which tendency continues in the Indo-Afghan school also, though not to that extent. No doubt it is a product of a modeller of eminence, who was not only the master of his craft but also a man of vision and hence who in every step knew beforehand what he would be going to do, that too with the utmost ease. It is doubtful, if we can come across many examples modelled with such a freedom.

Coming back to the main theme, certain types of folds of drapery, for instance, which have string-like form, are worked in this method, i.e. modelling in the very places where different details lie. The Buddha group from Kālawān as well as from Jauliān[65] can illustrate this point (our Figs. 20 and 21-24 respectively).

[65] In the Buddha's image (Fig. 21) the second fold from top, running from the head of the right arm to the left shoulder through the region below the armpit and the breast, gives the impression of its being supported by an underlying rope, though close examination does not strengthen this impression. Since the practice of fixing the ropes in position at first in order to model the folds over them is definitely known from 53 metre Bāmiyān stucco image of the Buddha, there could not be any wonder, if this device was frequently adopted. There is also a great chance of their getting so much rotten that it would be difficult to recognize their former existence. In any way it would be useful, if future investigators pay attention to this aspect.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

The second, i.e. the *appliquée* method can also be of two kinds: modelled separately (in other words, not in the very places in which the given motives lie on the image) and moulded. In order to create certain ornaments or similar objects, if required amounts of clay are pressed to the relevant areas, their edges, etc. need to be cut sharply, and such a work disturbs the surfaces of the bodies of the images, which have been already shaped cleanly. If such items are made separately, and pasted later in required places, it would save much labour. This seems to be the only advantage of the first of the *appliquée* methods. Judged from the photographs hitherto published, it seems that this method is adopted less, yet certain items can be referred to here. Oval bead on the left temple and the hair locks behind it in our Fig. 30, the moustaches of Fig. 34, bands (*kaṅkaṇa*) at the wrists of female figure, of *devatā* (on the right side, upper row) and also of large broken image on the right side of the group in our Fig. 23 (?) [if all of these were not improvised newly in repairs undertaken, Cf. this with Figs. 21 and 22 (?)] and others.[66]

As far as the second *appliquée* method, viz. casting goes, the examples are innumerable, for it is of quicker and easier means. Mould is of much help not only when the same kind of ornaments or hair locks are to be brought on either several images of one person, say Bodhisattva or of different characters like Indra, *Devas*, different Bodhisattvas, royal personage, etc., but also when they are to be repeated in one and the same image of a particular individual, say the locks of one kind on the head of the very Buddha image. If each of the locks with its details is to be modelled by the hand, it will take much time and energy. Several such items can be, on the other hand, produced within a few minutes by pressing bits of clay into the mould. By applying one variety of lock in different arrangements, several patterns of hairdress can be sought. A further advantage is that according to the necessity certain parts of the locks or ornaments can be cut out and pasted on the images of varying sizes, though this scope too has limits, because a hair lock meant for a huge image cannot be pasted on a small figure or the other way round. Before illustrating this type of work, the way of pasting may be explained. The casts are spread on some flat surface for a while after they have been taken out of the moulds, so that they get slightly hardened in the air. When they still have some moisture in them and are still flexible, some amount of clay in thick liquid form like honey or so, is applied on the place by brush or by similar means where the casts are to be pasted. They are then pressed gently so that they remain stuck to the places and at the same time no details will be lost because of the pressure. This is the method followed in the modern practice to be dealt with in the next chapter. Also from common sense point of view it seems plausible that

[66] D.R.A.A., Figs. 180-182, note the bracelets at the wrists which are simplest in form and irregular too, so it seems rather certain that they are first rolled by hand separately as rods which are later wound around the wrists, when they are still wet. From the irregularity of their shape, we thought that the moustaches in our Fig. 34 might have been shaped in this method, but it should not be insisted. They might have as well been the casts made from the mould or moulds.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

more or less this is the procedure in which the artists of the regions in question have done the work. As a matter of fact, there is a clear indication for the application of liquid clay for pasting purpose, see the area between the top of the ear and the hair lock still hanging on the temple of the Fig. 26, from which area the lock has fallen but the trace of the liquid clay worked as adhesive element still remains. So on this evidence one may take it for granted that the procedure described above has been in vogue in ancient days in relevant regions. In the Fig. 29 the hair knot on the crown part of the head as well as its root and the free ends of the rope with which this knot is supposed to be tied, are nothing but separate casts. Apart from the fact that these have been repasted after the excavation, as can be made out from the photograph itself, the work is originally quite an indifferent type, though the face is not badly executed. The different units of the hair locks in Fig. 33, which are in the form of rising waves, are in fact the casts, yet they are so cleverly pasted, perhaps with the additions of bits of clay to join them, that it is not easy to recognize them as casts. In reality these seem to be meant for a bigger image and this cannot be noticed so long as the whole bulk of the hair is looked at in relation to the rest of the head, for they are after all proportionate. But this matter can be realized when each bulk is studied singly in relation to the face only; this is more clear from the big lock that falls towards the right ear from the crown area. This is a quite common practice also in Akhnur and Ushkar, as is clear from our Figs. 25-26 and 31 as well as from those published by others.[67] Akhnur artists, however, do not show any skill in creating patterns while pasting different casts, especially each lock remains in isolation as an individual unit and in space too they are in some distance from one another. This is not only because of the fact that some of the units have fallen, but this is the case with even those examples in which they are better preserved. The Ushkar modellers, on the other hand, are skilful enough in this respect. A head from Ushkar has a somewhat raised region of parietal and partly frontal bones of the head looking like a dome, clearly indicated or demarcated with hairline, including its angles at the temples. Some heads having similar characteristics were collected by different explorers from certain places in Tarimia (East Turkistan). Pelliot unearthed a few from Tukkuz Sarai (Tumshuk). Also a big mould of a head having the same characteristics was found in Shorchuk and Le Coq named it a monk's head. If it is left as it is and coloured appropriately it may go as a shaven head of a Buddhist monk. That similar heads might have been used at times as monks' heads, may not be ruled out altogether, but that it is not the general rule, is proved by another head with similar characteristics found in the latter place by Stein. The present condition of this head, though accidental, is highly illu-

[67] For the Figs. from Akhnur, see Mg. Vol. VIII, No. 2, pp. 53-64 where Fabri published a number of them. For those from Ushkar, see Kak's H.P.S., pp. 12-24 and A.M.K., Pl. 58. While describing the hairdress of an image from Mohrā Morādu, Marshall also reports (Tax. Vol. II, p. 471, 2nd Para.) this method to have been adopted. This is a specific reference to the unbaked technique, though he calls the head in question as terracotta.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

minating, for its dome-like shape is exposed after several locks pasted on it have fallen.[68] From this it can be safely concluded that to shape this part of the head with slightly exaggerated form like a dome is a technical expedient in most cases, viz. an easier way of bringing the effect of hair bulk, even after pasting the thin cast locks. To refer to one more example of the work of pasting hair locks, a man with flower basket in hand in our Fig. 32, has a hairdress which looks to have been cleanly combed. The entire hairdress is in fact executed by pasting only one kind of locks cast from a single mould, but they are pasted with a clear understanding of the course of the hair, with a varying degree of overlapping and the change of direction. That the hair is worked out by the *appliquée* method is too obvious, especially from the broken area above the forehead and also of templar region. A similar clever arrangement is also seen in a Buddha figure from Shotorak,[69] though it has a different kind of locks, which being the casts from one mould are all alike. The Shotorak example has a historical significance, because it indicates that the mould has been in use with special reference to the unbaked clay technique, from the 2nd or the 3rd century A.D.

[68] For the Ushkar head, see H.P.S., p. 18. The heads having this character and belonging to Pelliot's collection (preserved in the Musée Guimet) bear the following numbers: EO 1085, MG 23648 (P. No. 142) and EO. 1079 (P. No. 255). These are reproduced in a recent work: *Toumchouq*, by Hambis, Hallade, etc., Paris, (1961 and 65?), but at the moment we are unable to give the references to it. The mould collected by the 3rd German expedition party, which Le Coq describes, is preserved in the Museum für Indische Kunst Berlin and bears the No. III. 7985 (the specification of the catalogue was formerly IB which was changed to Roman III, when, 1963 January, the collection was separated from the Museum für Völkerkunde, with which a new Museum was started). The head belonging to Stein's collection is in the British Museum and bears the No. Mi. XVIII. 004 and published in Ser., Pl. CXXX. For a similar head, see also Tax., Vol. III, Pl. 137,f.

At this point it may be further stated that this dome-like treatment is not confined to the clay figures, but this is also found in other media, for example stucco, vide G.S., Pl. 111 (p. 145), perhaps a monk's head, and also see Pl. 108 (p. 144), a group of two monks, though in these cases it is not so prominently treated. Both these specimens are from Haḍḍa. It seems likely that this tendency originates from certain early Buddha images such as those famous examples from Mathurā reproduced in several books, including the above-mentioned work, see Pls. 139 and 140 (p. 188). (One of these two is a seated Buddha from Katrā, which has been quite often referred to in the controversy over the first anthropomorphic representation of the Buddha.) Both of these stone sculptures have the *uṣṇīṣa*, but no details of the hair are executed. Hence this hairdress without the *uṣṇīṣa* looks like a dome. This might have inspired the later people to adopt this dome-like treatment of the skull in the case of the heads of monks, which are supposed to be cleanly shaved. People might have, however, felt that the cleanly shaven representation of the head was sculpturally uninteresting and on the contrary they might have found it interesting to treat them in such a condition when the cleanly shaven head gets some hair growth. In the next stage the modellers, i.e. workers in pliable media, clay and stucco, might have found it to be a convenient expedient to execute the bulk of the hairdress with a minimum effort (viz. just pasting the thinly cast locks of the hair) to get maximum effect. In the absence of such a bulky or bulging base one has to bestow much labour to produce the necessary volume of the hair and this would seem quite plausible when one takes note of the fact that the cast locks are often pasted in order, again, to save the labour and time too. (This problem does not arise in the case of those who carve or cut out unnecessary bulks.) Thus it seems highly probable that the modellers used this dome-like shape of the head in two ways: in the case of the monks they have left it to represent a shaven head, but with a slight growth of the hair and in the case of others they utilized it as a technical expedient to paste the cast locks on it.

[69] Str., p. 66, the Buddha image under discussion is reproduced in Pl. VI, Figs. 19 and 20.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

As to the other ways of employment of mould, it is not only confined to the ornaments of human figures, but also some motives are prepared with the help of it; the flames of fire, for instance, are executed in this way.[70] If the question of ornaments executed with the human figures arises, examples are too numerous like those of the hair locks. But to confine[71] to our reproductions, it would suffice to refer to Fig. 25, which, besides having varieties of them, shows remarkable technical details connected with decorative motives. After the facial mask which, in all likelihood, is a cast, has been attached to the core, the front portion of the head is executed by adding the necessary amount of clay, which is in the form of a plain region. On this area the hair locks cast separately are pasted, representing curly hair. This region rises almost vertically and in size it is disproportionate in relation to the forehead, but it may not look so, because it loses its importance in a massive ornamental scheme. Whatever may be its aesthetic values, the technical aspect to be noted here is its way of execution. Above this hairdress is seen a fillet, probably with two rows of bands, which are broken now, the upper one greatly. At the centre of this fillet there is a big rosette, formerly a complete one, but now remains only in a half way. Likewise, another rosette, much smaller in size, is seen falling on the forehead at the centre of the hairdress, which is divided at this point into two halves, running sideways. This small rosette can be easily supposed to have belonged to the fillet, from which it might have hung. Its main interest for us at this moment, is the way in which the fillet is brought onto its place. All parts of the fillet are obviously the casts, which are pasted. The casts of ornaments, the hair locks and the like are thin as a general rule in this case. And the same seems to be the general trend in the clay modelling. In order to paste them in position, two separate bulks of clay are added one above the other, the upper one being bigger as well as thicker, this can be observed in Fig. 25 and more clearly in Fig. 27. Thus here there is no question of either gradual modelling (i.e. in layers) or casting, but only addition in one heavy bulk of desired size. Hence the condition of the clay employed for the purpose is more pulpy and thick, the latter quality being the result of not having much moisture. Such a clay is taken in hands and rolled with finger tips to have necessary size and a rough shape. These bulks are then placed one after the other in position, presumably by adding previously a thin coat of liquid clay like the gum coat in the place and pressed with fingers checking at the same time that they are firmly attached and have the rough form to serve as the base for pasting the cast ornaments on them. This entire method can be easily observed in the depressions resulted from pressing these bulks with finger tips, which are so distinctly visible in the original image as well as in

[70] D.R.A.A., Fig. 167. That they are fashioned in this way is clear not only from their very similitude, but also from certain area from which some individual flames have fallen down.

[71] Cf. a Bodhisattva image reproduced in Figs. 7 and 8 of D.R.A.A., in which the broken chain or the necklace reveals similar aspects.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

the photograph. Likewise, further bulks of clay are added as the necessity of bringing further details has arisen, for example, see in Fig. 28 or in 26, where there is a cone-shaped object towards rear. This is not in any way the speciality of the execution of the hairdress, headdress, etc. in the figure in question, but it is a much too common method found in Tarimian (East Turkistan) clay figures. It is not difficult to illustrate the same in the Kāśmīrian, or Indo-Afghan examples had adequate photographs taken from proper angles been available. Whatever we have discussed here in connection with the hair locks, ornaments and other motives, and the ways of their preparation, illustrate the general principles adopted in this type of technique in certain regions. Within these general ways some variations can be observed which illustrate the cleverness of the artists in tackling certain special problems arising from given needs, but it is not the place to go into those details, which should be dealt with in the works devoted to the description of the individual pieces. In case anyone is, however, particularly interested in those details, one can observe them for oneself, for we have given the references to almost all the published examples, though some of which have gone even under the caption terracotta till now.

It may be pointed out further that this method of adding the necessary bulks of clay in thick form as a base, especially in order to work out the headdress or hairdress and, to paste the ornaments, etc. on such bulks, is possible because of the fact that most of the clay images are executed against the walls or very close to them, which can thus be seen mainly from the front view. Then they can also be seen from the three quarter view, that is why, certain details are fashioned in such a way that the figures look nice from this view also. Had there been any scope for looking at these figures either from the side view or from the back view, this method could not certainly have developed or been adopted at all, for, after all, such masses of clay create the impression of unfinished or untidy look. If suppose a figure is executed to have stood in three quarter view in a group, then the ornamental as well as the bodily details are shaped accordingly, if not also, with necessary principles of perspective. For all these points there are clear examples in Tarimia. Since the material from the Indian and Indo-Afghan regions is limited, Tarimian examples, which are plenty, would help the interpretation of the former, because there is a great similarity between the two, which need not necessarily suggest, as is often claimed, that in every respect Tarimia is a borrower from "Gandhāra". In this way the study of Tarimian art is of help in realizing some aspects, not to speak of other historical facts and values. Again it must be repeated that in spite of executing the clay figures against the walls or close to them, these are not reliefs, in proper sense, but the figures in the round, which must be borne in mind in order not to miss the historical fact that the relief in unbaked clay technique has not been favoured in India for unknown reasons, as can be noted from the explicit prohibition of it in our Sanskrit texts. This as well as the prohibition of terracotta for worship has a bearing on the statuary of foreign countries, where there has been an Indian influence.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

POLISHING OF THE SURFACES OF IMAGES

When the entire work with clay, i.e. not only modelling different limbs fully but also shaping or pasting (as the case may be) the hair locks, ornaments, etc. is over, the stage comes for polishing. The fact that polishing is effected on the clay images, as on stuccos, is quite evident even from the photographs, see for instance, figs. 32 34, 33 (the last being hitherto said to be terracotta) and others.[72] This can be said to be a usual practice, but not an invariable one, for our Akhnur heads (Figs. 25 and 31) and the kind do not show this sort of work. We have inferred them to be casts, so it requires a close study of several such examples, to conclude whether the polishing has not been commonly done on the cast heads or it is only accidental that in particular cases the artist did not feel it necessary to do this work. The coat applied for polishing is "slip" in the vocabulary that Marshall habitually employs.[73] No doubt, it is not a thick coat, and at the same time it is not also as thin as a wash, but somewhat thicker than that. And similarly certain is the fact that the material employed for this purpose, is nothing but clay. The same clay with which the final layers were given, might have been applied for this purpose, with the difference that in this amount of clay no fibrous material might have been mixed and, further, it might have been made thinner like a mortar by adding a necessary amount of water to it, which then might have looked as fine as filtered slim. Except inferring in this way, the nature and the method of preparation of the clay employed for the purpose of polishing cannot be determined now. In any case, this work gives an extraordinarily fine and soft surface, which is quite necessary in view of the colouring done concomitantly with the unbaked clay images, apart from the fact that it gives also the appearance of a good finishing, as may be observed in our Figs. 33 and 34, both are good pieces and especially the latter is an example of a remarkable workmanship, with all its clear and telling features. It may be, however, pointed out that it is a common practice not only in the Indo-Afghan regions but also in Tarimia that this polishing layer, though effective, was not given on the places like ornaments, hair locks, etc., for example, see Figs. 29, 32 and 33. This need not be accounted for their being often casts. After all, the practical issues are involved here. The

[72] D.R.A.A., Figs. 8, 9, 175, 181, 182, 188, etc., to mention a few.

[73] Tax., Vol. I, p. 381; Vol. II, p. 471 (where he changes the phrases to "thin clay wash" and "no lime-slip" and specifies the piece as terracotta, which needs scrutiny) and A.S.I.; A.R. (1915-16), p. 29, note 1 (here too the phrases are "clay wash" and "lime slip"). In a descriptive list of objects discovered in Bāmiyān Hackin mentions certain colours, as usual in archaeological literature, in very brief phrases. The general method in which he mentions them is the traces of such and such colour. As against this in one place (N.R.A.B., p. 47, item 1) an additional matter is also stated: "la tête et la crinière sont recouvertes d'un enduit jaunâtre; traces de polychromie, vieux rose et bleu" (see Fig. 71). It is not clear whether or not he too, like Marshall, wants to suggest a "slip" or its kind by the phrase, "yellowish coat". If he means it, then, there is another similar phrase (ibid., p. 48, item 4): "recouvert d'un enduit grisâtre" to be taken into account, though here there is no mention of further colours. He may or may not intend the same as Marshall, the purpose of these "yellowish" and "greyish coats" is, however, not clear.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

clay employed for this purpose would not be like water and even if it is prepared in the thickness of honey, it would fill the small and at times deep recesses in such motives and hence it would turn them blunt by causing the loss of sharpness and clarity of their features.

APPLICATION OF WHITE FOR GROUNDING

When the total work with clay is completed, the white is applied to prepare the ground for colouring. That it is used for this purpose is unquestionable and, according to Marshall's phraseology, this is "white lime wash".[74] The reason for his specification of it as lime, is not clarified. It is, however, not actually known out of which material the white is prepared. Equally unknown is the binding medium to be added in this white as well as in the colours, which is rather a more important aspect in the study of polychromy. Some new light may be thrown on the matter, if the authorities of the different museums having collections of clay images, take interest in getting the colours chemically analysed, though they are sparely preserved in traces only. As far as the photographs permit to say something about the white applied as grounding for colouring, our Figs. 33 and 34 still bear some patches of it. Its thickness observable in some other reproductions[75] may even suggest that the white might have been applied in several coatings. So much for the grounding.

APPLICATION OF COLOURS

When the question of the preparation of colours arises, it is sometimes stated in connection with wall painting that the "colours" are "largely manufactured out of local earths and minerals".[76] Generally speaking this observation may be true in the case of many centres as well as of the colours applied on images made of clay and stucco. But we do not know the way in which they are abstracted from different materials.

Whatever little information we have regarding the polychromy proper, i.e. of colours and to a very limited extent, their scheme, it is mainly, if not solely, the contribution of the French archaeologists, notably of Hackin. Already by the time when the images were discovered or unearthed, the colour on them was not intact throughout. Secondly, dealing

[74] Tax., Vol. I, p. 381; A.S.I.; A.R. (1915-16), p. 29, note 1; in one place (Tax., vol. I, p. 340) "fine plaster" is mentioned, but it is not quite clear whether the so-called "lime wash" is meant by it.

[75] For example, see D.R.A.A., Figs., 170, 181, 185, etc. A word of caution should be pronounced here. Many of the figures included in our work as well as those published by others, are originally polychromes and there is a possibility that some of the colours, reduced to a grey scale in photographs, may give us the illusion of white, while in fact, certain patches are not of white. In spite of this awareness, we have referred to some examples here, because most of the figures have lost colours greatly.

[76] A.A.I., p. 107. With specific reference to Haḍḍa Barthoux says (F.H., Vol. I, p. 47) that it is not known from which place the red and the yellow ochres come while the mines of *lapis lazuli* are found in "Haute-Koktcha" and near "Maïmana".

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

with several aspects of excavations, the archaeologists have a little occasion to devote to the minute description of the colours as far as they are preserved. Certain figures are described to be polychromes while others are said to have traces of colours. Even in some cases the colours are mentioned by names but without the specification of localities.[77] This kind of information does not serve our purpose fully and, in the circumstances it is vain to expect to make a clear picture of polychromy on clay figures even for oneself. Nevertheless some useful points of the topic may be noted.

A Bodhisattva image discovered from Tépé Maranjan is stated[78] to have been painted entirely, but no details, except those of the head, are reported. The reason for this is perhaps that the figure has lost most of its colour, hence the above statement is based on some traces — small or big. Two more female figures, executed only up to the waist, are fully painted — one in blue while the other in rose colour.[79]

There are known examples of gilding as such, though the further information is lacking, except a few details of grounding. It seems to be a general practice to apply the gold (though often it is not known whether it is a leaf or dust or liquid) on the same white ground, which is prepared for general colouring. In one case it is also reported that no ground is made. Similarly only the following single instance is known for the use of red as grounding. A Bodhisattva image is found mutilated in Fondukistan, the lower body of which is preserved while the upper body was destroyed except the head which was found separately, but supposed to have belonged to it. This head is gilded by applying gold leaf on the red ground,[80] a method, which is commonly adopted with stuccos as well.

Some pieces are reported to have white colour only,[81] but it is doubtful, if the white

[77] Carl names (D.R.A.A., p. 7) two images from Tépé Maranjan (reproduced in Fig. 11) as polychromes. Hackin describes some of the figures found in Bāmiyān simply to have traces of polychromy (see N.R.A.B., p. 47, item 2; p. 48, item 3; p. 53, item 45; p. 54, items 52 and 53 and p. 70, item 157 oreilles peintues) while others to have certain colours without specifying their localities (ibid., p. 47, item 1, vieux rose et bleu; p. 49, item 14, rouge and item 17, jaune; pp. 52-53, items 42-43, rose; p. 53, item 44, bleu; p. 53, item 46, rouge; p. 54, item 50, vieux rose and p. 55, item 63, rouge). Add to this list, A.S.I.; A.R. (1915-16), p. 29, note 1; Tax., Vol. I, pp. 340 and 381, where Marshall notes just "paint".

[78] D.R.A.A. (Hackin), p. 10 (see Figs. 7-9) and with the same observation it is again referred to in another context, ibid., p. 49.

[79] D.R.A.A., Figs. 180 and 181 and Hackin's statement (p. 57) leads us to understand that the two figures are painted in two different colours, but we are not certain whether he intends to say the same or that these two colours are applied on each image, for he also says that these busts are not nude. If we correctly understood him, his statement might also mean that the figure 180 is blue while 181 is rose.

[80] For the example lacking any grounding, see Tax., Vol. II, p. 471, which is reported to be terracotta, but it is doubtful, if it is originally terracotta. For the cases having white ground, see A.S.I.; A.R. (1915-16), p. 29, note 1 and Tax., Vol. I, pp. 340 and 381; for the example of Bodhisattva's head, see D.R.A.A., Fig. 170 and for its description, vide p. 54.

[81] N.R.A.B., p. 50, item 19 which is a fragment and in its description the face is said to be white. The second example is also a fragment, ibid., p. 53, item 49 the hand of which is described to be white.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

is painted on them as final bodily colour. It may be possible that there were some other colours over the white. The latter might have been employed, as usual, for grounding and those meant to be the general colours of the body might have fallen. Hence the white is creating the impression of being the general colour of the bodies of the given pieces. Such instances are many in Tarimia (East Turkistan) and in spite of the presence of some traces of other colours in obscure places, some authors have described them to be white-coloured. By this it is not argued that the similar mistake is committed in these cases too; firstly, we have not studied the originals in question and even if we could study them, we cannot make such a statement, unless our own observation proves it otherwise. What is driven at by this statement, however, is that one must have sufficient evidence to state that given images have the white as the general colour of the body. This is for two reasons: firstly, it is most unlikely that clay images are painted white as the general colour of the body, because the polychromy in this case is not partial like in many stuccos but complete and secondly, there is a misleading factor, viz. the white applied as grounding may lead to wrong impression, if the overlying coats of colour have fallen. Nevertheless there is an evidence to state that at least one male figure is known, which is painted white as the general colour of the body. Here the evidence is conclusive, for the white is coated on the red ground.[82] This does not necessarily mean that the ground is prepared with red instead of white. In the absence of any clear statements by the archaeologists in this regard, we infer that on this figure too, as usual, the ground is prepared with white on which red is applied as underlying colour to the final coating of the white meant as the general colour of the body in order to obtain certain effect. It is a well-known fact that by painting different pigments as underlying coating one can achieve varying effects, especially when the white is employed in big patches or areas as final colour. In fact without such methods the white as final colour remains not much effective. Being the only known example of such practice in Indo-Afghan school, this is invested with a great historical value. The pink colour is known to have been applied on the face of one specimen, which suggests that it is the general colour of the body. And lastly, the red also seems to have been used as the general colour of the body.[83] So much for the general colour of the body.

So far as the details of the paint on the face or head are concerned the following items are known. The hair on the head, brows and irises of the eyes are painted black.[84] The

[82] D.R.A.A. (Hackin), p. 54 and see Figs. 168, 171 and 174. Rowland erroneously calls it terracotta, see A.A.I., p. 110 (and Pl. 61).

[83] For the specimen having pink, see A.S.I.; A.R. (1915-16), p. 29, note 1 and for the red, see N.R.A.B., p. 48, item 10.

[84] D.R.A.A. (Hackin), p. 10 (related to the image reproduced in Figs. 8-9) and p. 54 (in connection with the image published as Figs. 168, 171 and 174). There are some more examples in which the hair on the head is in black, N.R.A.B., p. 48, item 9; p. 50, item 19; p. 53, item 46 and p. 59, item 91. For further examples of brows in black, see ibid., p. 50, items 19 and 22.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

with several aspects of excavations, the archaeologists have a little occasion to devote to the minute description of the colours as far as they are preserved. Certain figures are described to be polychromes while others are said to have traces of colours. Even in some cases the colours are mentioned by names but without the specification of localities.[77] This kind of information does not serve our purpose fully and, in the circumstances it is vain to expect to make a clear picture of polychromy on clay figures even for oneself. Nevertheless some useful points of the topic may be noted.

A Bodhisattva image discovered from Tépé Maranjan is stated[78] to have been painted entirely, but no details, except those of the head, are reported. The reason for this is perhaps that the figure has lost most of its colour, hence the above statement is based on some traces — small or big. Two more female figures, executed only up to the waist, are fully painted — one in blue while the other in rose colour.[79]

There are known examples of gilding as such, though the further information is lacking, except a few details of grounding. It seems to be a general practice to apply the gold (though often it is not known whether it is a leaf or dust or liquid) on the same white ground, which is prepared for general colouring. In one case it is also reported that no ground is made. Similarly only the following single instance is known for the use of red as grounding. A Bodhisattva image is found mutilated in Fondukistan, the lower body of which is preserved while the upper body was destroyed except the head which was found separately, but supposed to have belonged to it. This head is gilded by applying gold leaf on the red ground,[80] a method, which is commonly adopted with stuccos as well.

Some pieces are reported to have white colour only,[81] but it is doubtful, if the white

[77] Carl names (D.R.A.A., p. 7) two images from Tépé Maranjan (reproduced in Fig. 11) as polychromes. Hackin describes some of the figures found in Bāmiyān simply to have traces of polychromy (see N.R.A.B., p. 47, item 2; p. 48, item 3; p. 53, item 45; p. 54, items 52 and 53 and p. 70, item 157 oreilles peintues) while others to have certain colours without specifying their localities (ibid., p. 47, item 1, vieux rose et bleu; p. 49, item 14, rouge and item 17, jaune; pp. 52-53, items 42-43, rose; p. 53, item 44, bleu; p. 53, item 46, rouge; p. 54, item 50, vieux rose and p. 55, item 63, rouge). Add to this list, A.S.I.; A.R. (1915-16), p. 29, note 1; Tax., Vol. I, pp. 340 and 381, where Marshall notes just "paint".

[78] D.R.A.A. (Hackin), p. 10 (see Figs. 7-9) and with the same observation it is again referred to in another context, ibid., p. 49.

[79] D.R.A.A., Figs. 180 and 181 and Hackin's statement (p. 57) leads us to understand that the two figures are painted in two different colours, but we are not certain whether he intends to say the same or that these two colours are applied on each image, for he also says that these busts are not nude. If we correctly understood him, his statement might also mean that the figure 180 is blue while 181 is rose.

[80] For the example lacking any grounding, see Tax., Vol. II, p. 471, which is reported to be terracotta, but it is doubtful, if it is originally terracotta. For the cases having white ground, see A.S.I.; A.R. (1915-16), p. 29, note 1 and Tax., Vol. I, pp. 340 and 381; for the example of Bodhisattva's head, see D.R.A.A., Fig. 170 and for its description, vide p. 54.

[81] N.R.A.B., p. 50, item 19 which is a fragment and in its description the face is said to be white. The second example is also a fragment, ibid., p. 53, item 49 the hand of which is described to be white.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

is painted on them as final bodily colour. It may be possible that there were some other colours over the white. The latter might have been employed, as usual, for grounding and those meant to be the general colours of the body might have fallen. Hence the white is creating the impression of being the general colour of the bodies of the given pieces. Such instances are many in Tarimia (East Turkistan) and in spite of the presence of some traces of other colours in obscure places, some authors have described them to be white-coloured. By this it is not argued that the similar mistake is committed in these cases too; firstly, we have not studied the originals in question and even if we could study them, we cannot make such a statement, unless our own observation proves it otherwise. What is driven at by this statement, however, is that one must have sufficient evidence to state that given images have the white as the general colour of the body. This is for two reasons: firstly, it is most unlikely that clay images are painted white as the general colour of the body, because the polychromy in this case is not partial like in many stuccos but complete and secondly, there is a misleading factor, viz. the white applied as grounding may lead to wrong impression, if the overlying coats of colour have fallen. Nevertheless there is an evidence to state that at least one male figure is known, which is painted white as the general colour of the body. Here the evidence is conclusive, for the white is coated on the red ground.[82] This does not necessarily mean that the ground is prepared with red instead of white. In the absence of any clear statements by the archaeologists in this regard, we infer that on this figure too, as usual, the ground is prepared with white on which red is applied as underlying colour to the final coating of the white meant as the general colour of the body in order to obtain certain effect. It is a well-known fact that by painting different pigments as underlying coating one can achieve varying effects, especially when the white is employed in big patches or areas as final colour. In fact without such methods the white as final colour remains not much effective. Being the only known example of such practice in Indo-Afghan school, this is invested with a great historical value. The pink colour is known to have been applied on the face of one specimen, which suggests that it is the general colour of the body. And lastly, the red also seems to have been used as the general colour of the body.[83] So much for the general colour of the body.

So far as the details of the paint on the face or head are concerned the following items are known. The hair on the head, brows and irises of the eyes are painted black.[84] The

[82] D.R.A.A. (Hackin), p. 54 and see Figs. 168, 171 and 174. Rowland erroneously calls it terracotta, see A.A.I., p. 110 (and Pl. 61).

[83] For the specimen having pink, see A.S.I.; A.R. (1915-16), p. 29, note 1 and for the red, see N.R.A.B., p. 48, item 10.

[84] D.R.A.A. (Hackin), p. 10 (related to the image reproduced in Figs. 8-9) and p. 54 (in connection with the image published as Figs. 168, 171 and 174). There are some more examples in which the hair on the head is in black, N.R.A.B., p. 48, item 9; p. 50, item 19; p. 53, item 46 and p. 59, item 91. For further examples of brows in black, see ibid., p. 50, items 19 and 22.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

hair on the head of a *Yakṣa*, however, is also known to have been painted red instead of black.[85] The folds of the eye lids are demarcated either in red or in blue lines.[86] We infer that the blue meant here is *lapis lazuli*, which is used for the same purpose in Tarimia (East Turkistan) also. It may be clarified that often, if not invariably, the folds of upper lids are demarcated with lines frequently in red and at times also in blue, whereas the lower lids are seldom demarcated with such lines. This is one of the peculiarities or specialities of polychromy in the Indo-Afghan school as is the case with the Tarimian statuary. The eye balls are reported to have been indicated with yellow,[87] but it appears somewhat strange. If the eye corners are painted, then they can be in red and if the white parts of the eyes are intended to be shaded, then one can do it with blue. It may be that originally red is painted there and this might have fallen off leaving only tint, which probably appears now yellowish. In any case it should be investigated before affirming it to be originally yellow. Notwithstanding the lack of a clear statement in the archaeological literature, we may take it for granted that, most often, if not invariably, the eye lashes are painted, probably most frequently in black, as some reproductions may support it.[88] It might have, however, fallen in course of time. In one case we know that the hair line is drawn in red.[89] The hair line as well as the lines on other places such as the folds of the ears and neck might have been frequently drawn, as has been noted by the archaeologists in the case of stuccos, but no information is available.

Coming to the rest, it should be noted that Buddha's robe is painted in red of different shades which we may assume to be the commonest practice, but it is also noted in one case that the blue is used on the undergarment appearing partly between the uncovered right shoulder and the robe[90] which may not be so common. The mantle, not the custo-

[85] N.R.A.B., p. 51, item 30.

[86] D.R.A.A., p. 10. In connection with the Bodhisattva image reproduced in Figs. 8-9, Hackin says: "la bordure des paupières soulignée de bleu". Another piece also is described (N.R.A.B., p. 50, item 20) in the following way: "un seul oeil, souligné de bleu". On account of the similarity of phrasing, we may take this as an example of the fold of the eyelid, though not literally mentioned. In the description of a piece we find (ibid., item 19) a phrase: "globe oculaire cerclé de rouge". Apparently this is concerned not only with the folds of upper lids but also perhaps that of lower lids, as the ball is referred to instead of simply lid. In that case the red lines demarcate the folds of upper and lower lids, although this cannot be made out from the reproduction (Fig. 75) and this cannot be inferred in the case of example quoted first, though plural is used there, for it may mean two upper lids only. It may be noted that in Tarimia (East Turkistan) both the practices are found, though often only upper lids are demarcated in line. As a matter of fact we may notice in the figures from Fondukistan (for example D.R.A.A., Fig. 171) that the folds of the lower and upper lids are demarcated alike in line.

[87] D.R.A.A. (Hackin), p. 10, in the description of the Bodhisattva image reproduced in Figs. 8-9.

[88] As for example, see D.R.A.A., Figs. 168 and 171, these lines are not so distinctly seen when the same image is reproduced in Fig. 174. This is owing to either photographic effects or to the fact that the colour has meanwhile fallen off, as Hackin reports (p. 54) some loss of the colours after its discovery. Further, the heads reproduced in N.R.A.B., in Figs. 74, 78, etc. may be consulted in this connection.

[89] N.R.A.B., p. 50, item 22.

[90] In connection with the images reproduced in D.R.A.A., Figs. 165 and 166 Hackin reports (p. 53) the use of red

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

mary monastic robe, of another image supposed to be of Buddha, is painted fully with blue,[91] perhaps *lapis lazuli*, if we are correct in our inference. Blue is also employed to represent the strips or perhaps the folds of *dhotī* of red tint.[92] A few examples of scarves are known to have been painted: one in light blue, another in green and probably one more piece in red also.[93] If one or two minor objects are left out,[94] this is all that we can learn about the polychromy on clay images of the Indo-Afghan school.

It appears that there is much scope of adding to our knowledge of polychromy if only those originals which are already brought to light are studied properly, which is beyond the means of many, on account of the fact that they are distributed to several places lying far away from each other. If the brief accounts of polychromy on stuccos and clay images, as we could gather them today on the basis of published archaeological literature, are closely followed one aspect appears very striking, viz. the manner in which the figures of these two media are painted, and it seems likely that this difference remains unaltered even when the study would advance to the desired degree. Notwithstanding the fact that the white is the general colour of one example known up to now, the use of colour, generally speaking, is profuse, rich and intense on the clay images as against on the stuccos, on which colour is mostly employed either in small patches to pick out certain ornamental details or to draw only lines on some places and hence the white, i.e. original shade of the material (stucco) remains as the general colour of the body in the case of the latter, without reference to the iconographic aspects. This seems attributable partly to the nature of the media. In this connection it should once again be remembered that according to the textual account, too, images made of the material other than clay may or may not be, i.e. optionally, painted while clay figures must be coloured. Thus according to the textual and the archaeological evidences the polychromy is concomitant with the unbaked clay images.

on the robe while blue on the under garment. Elsewhere, N.R.A.B., he notes different shades of red on the robe: p. 48, item 6, "rouge brique"; p. 53, item 49, "vieux rose" and p. 59, item 90, "rouge". It seems to us that by "rouge" he means a simple red like red ochre, by "rouge brique" a kind of vermilion and by "vieux rose" deep rose (the last expression being totally unknown to us, our specification in this case is largely based on guess). Not only this practice (i.e. colouring the undergarment of the Buddha or any Buddhist monk with blue) is found but also the folded part of the upper garment, the part which encircles the neck, is sometimes painted with blue in Tarimia.

[91] D.R.A.A. (Hackin), p. 54, see also the Fig. 179. Rowland erroneously specifies (A.A.I., p. 110 and Pl. 62A) the same figure to have been baked, in other words, to be a terracotta.

[92] D.R.A.A., p. 54, the image under discussion is the one reproduced in Figs. 168, 171 and 174. Here Hackin does not specifically say that the general colour of the *dhotī* is red, but what he says is this: "Les couleurs, y compris les bondes bleues de *dhotī*, s'éccaillèrent rapidement ne laissant subsister que le fond de teint rougeâtre". This seems to us to imply what we have explained. Another point is that he describes the strips on *dhotī*. Strips on *dhotī* are rather unusual, so we guessed that these might have represented its folds, hence we have added a phrase to that effect.

[93] N.R.A.B., p. 50, item 21, "bleu pale"; p. 53, item 48, "verte" and p. 56, item 67, "rouge" (Hackin is not certain whether the last mentioned is a scarf or a robe.

[94] As for example, N.R.A.B., p. 57, item 75, which are four lotus petals painted in rose.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

This much is the account of unbaked clay technique of the ancient practice that could be reconstructed at present with the help of the scattered bits of information found in the vast archaeological literature, of course when the following fact is taken into consideration. Although care is taken and effort is made, it is after all humanly possible to miss or overlook this or that point in the tedious collection of bits especially from the kind of sources, many of which are the contributors to confusion rather than clarity.[95] Even if it is taken for granted that some points have escaped our notice, yet it can be believed that they would be minor ones; hence the above statement could hardly be an exaggeration. We may now turn to the topic of features indicating the accidental baking, a theme which has been kept postponed.

METHODS TO DETERMINE THE EFFECTS OF ACCIDENTAL FIRING OF ORIGINALLY UNBAKED CLAY IMAGES

D. B. Spooner has found unbaked clay images only in fragmentary state, probably in a considerable number too, in the excavations he has conducted at Shāh-jī-kī-Ḍherī. Either perhaps on account of an unimpressive style of those fragments or for some other reason, he has not been able to realize their importance.[96] Likewise there were also earlier discoveries, all sharing the same fate. But it is Marshall's discovery of the same kind at Jauliān, in a

[95] In addition to this, another difficulty had to be experienced. Never in the course of writing or revising or expanding this chapter we had all the necessary literature within our easy reach to consult whenever an idea came to mind and we wanted to examine the related aspects.

Here it may be pointed out that we came to know of Wheeler's recent work on Alexander's eastward advances, which might have contained topics somewhat relevant to our subject, but were unable to see it up to now. Hallade's excellent book, *The Gandhāra Style* came into our hands recently. She is one of the very few living scholars of Indian art, who write on the basis of long experience and thought. It deserves, therefore, greater attention, although it aims at dealing with the aspects such as style, iconography and the development conditioned by political and other faetors and as such it contains no new points of technique. Still at places it could have been profitably referred to in respect of the position she has taken with regard to the development of Gandhāran art (in its old sense), for we have also discussed this point in some detail. It has come into our hands at a time, when the printing of the previous pages has progressed so much that no additions could be made, and yet with some difficulty we were able to include a few statements, only in the footnotes, for they are directly related to our subject. A few points, however, may be mentioned here.

Her approach to the "Gandhāra" art, is a radical departure from all the previous ones, and sets this school of art in its right perspective. It is, hence, hoped that it marks the beginning of a new epoch in the study of that art. On the main points we agree with her, as far as the relation between the art movements in "Gandhāra" and the rest of India is concerned, but feel that a similar change in the attitude towards the relations between the art of "Gandhāra" or for that matter between the Indian art and that of Central Asia, is still to come. While considering the "Gandhāran" art as the continuation, in the main, of ancient Indian art and its heir, she also speaks of Indian influence at times (for example, G. S., p. 63). Although it becomes, on the whole, clear after some thought that she means by it the influence from the other parts of India, in particular from Mathurā; this phrase: 'Indian influence', may mislead in view of the fact that the previous authors have treated "Gandhāran" art as a unit totally separate from the art of the rest of India and, on the contrary, they have considered it as dependent or founded on the Graeco-Roman traditions. She too divides the "Gandhāran" art into Schist- and Stucco- Schools, which ultimately comes to frank acceptance of the Gandhāra and Indo-Afghan schools, though philologically noncommittal.

[96] A.S.I.; A.R., 1908-09, p. 55.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

comparatively good condition, that has brought some positive change in the attitude of archaeologists towards this medium in the form of a special and separate treatment of them in a monograph (*Memoirs of the Archaeological Survey of India, No. 7*), in which the concerning images were specified (p. 51) as clay figures, particularly in the captions of the relevant illustrations. But this has proved to be a short-lived affair, though Marshall has since then never failed to recognize the rôle of this medium. All through he has known and stated that many images and groups of images were originally unbaked clay figures and turned to be terracottas by an accidental fire, to which the most of the monuments have become the objects.[97] In spite of that he has let them pass under the heading of terracotta in his major work, viz. *Taxila*, instead of adopting quite a reversed terminology and description. This inconsistency will have its own effects, as already has been noted, as an example, that the same head or figures have been specified in different ways in the captions of the photo albums of the Department. This naturally causes the confusion. Apart from that he also believed, though not known on what grounds, that some images were originally terracottas while in some cases (viz. in larger sizes) the heads were original terracottas which were affixed to the bodies made in unbaked clay.[98] Theoretically it is not impossible, but we have doubts about it. For all these reasons it may be of some use to point out certain aspects, which may help future investigations of either old material or of those to be discovered.

First of all, the actual presence of the armature (not dowel at the neck) in any part of the body, even if it turned into charcoal, is an unmistakable evidence of unbaked technique, for the simple reason that it would be destroyed by the fire in kiln, if employed in those planned to be baked. Also, the simple cavities running through the length of any part of the body, which indicate the former existence of the armature, are more than enough to conclude the same. Even if the question of cavity at the neck or in the core of the head arises, in which there is a possibility of using a simple dowel, in case the given images are made without the full-fledged armature, one can read it out correctly in a majority of the cases. If it is a simple dowel, there must be some mass of clay—or of any such material—between it and the wall of the cavity to cement it in the latter which is contrived from the very beginning for this purpose. In the absence of such a mass of clay, one has to read from it that the given example is not originally terracotta. Take Fig. 28, only for the sake of argument, as we do not consider it to be the case for dowel, but only the *vaṃśadaṇḍa*. Had this been an example of the use of dowel, even then one must not conclude that it is a terracotta originally, although the piece is now in the hardened, i.e. slightly baked condi-

[97] M.A.S.I., No. 7, pp. 12-13, 18, and also 51, where the clay figures are separately listed and in most cases it is specially mentioned that they have been burnt on surface only, thus indicating the accidental firing. In his Tax., too, he mentions this fact not only in connection with Jauliān (Vol. I, p. 381), but also with other sites, for example, Kālawān (ibid., p. 337-38) and Mohrā Morādu (A.S.I.,; A.R., 1915-16, p. 29, note 1, though in this case he is not certain about the accidental firing).

[98] Tax., Vol. I, p. 338; Vol. II, pp. 468 and 470 (item 173) and G. Tax., p. 141.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

tion, because there is no clay mass present in the cavity, which could be supposed to be the cementing element. It cannot be argued that it has fallen down, for in that case there cannot be any definite form suggesting the shape of the dowel. This proves beyond any doubt that our Fig. 25 (=26, 27 and 28) from Akhnur is an unbaked clay image. This fact determines the nature of another illustration of ours, viz. Fig. 31 or for that matter all its kins from Akhnur. It may suggest that most of the Ushkar figures of their kind also are originally unbaked clay images. It would also be futile to argue that the head was modelled from the very beginning around a dowel, and hence this method makes it unnecessary to use any cementing element, because such a procedure would be meaningless in the case of the head to be burnt in a kiln, the heat of which burns the wooden peg tracelessly. This is one of the proofs.

At this juncture it may be pointed out that while describing the Kālawān group of six images reproduced here in Pl. IX, Marshall says that alone the heads of the Buddha and of Bodhisattva standing right to him, obviously in front row, are real terracottas, i.e. intentionally baked in kiln while the remaining ones — the bodies of the said two images and the rest of the four figures including the heads — have been burnt half way in the accidental conflagration.[99] Although he makes such distinctions at several places (see note 98 of this Ch.), nowhere does he explain what factors have led him to come to this conclusion. In view of this we may not be wrong in guessing that his ground is nothing but the fact that certain items are found baked better than the others. If that were the case, it is a too shaky ground, as this can happen depending again on the accidental situation that in a certain area the heat might be greater than in other places and there is no wonder in it, for after all it is an accident. Leaving aside that question, if we have to judge on the basis of the material before us, we have to note at first, considering the relative sizes of the heads and bodies, that the Buddha's head referred to by him (and measuring 18.1 inches) is nothing else than the biggest one seen at the centre of the plate here (IX). Then it does not show hard texture any more than the rest of the heads, and its clay has the loose and powdery effect as anything else. Moreover, the clay of surface layer has the typical character of unbaked technique as the remaining heads do.

In connection with the Bodhisattva's head, referred to above, he says that it still contains "the charred residue of the wooden peg by which it was made secure to the body". Further, he observes that the heads found in the chapel containing this group, are five in all, that is, one less than the bodies present there.[100] If we have to discover it in Pl. IX (containing all

[99] Tax., Vol. I, pp. 337-38 and he also reproduced this group (Vol. III, Pl. 77a) along with two close up views (ibid., Pl. 78a and b).

[100] For the first and second statements, see Tax., Vol. I, pp. 340 and 338 respectively. Its measurement is specified in Vol. II, p. 470 (item 174). It may be further pointed out that this head was reproduced as frontispiece to the Tax., Vol. II and in Vol. III, Pl. 137c, while the Buddha's head referred to above is illustrated as the item, d of the same Pl.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

the five heads) in the light of the above two statements, this lies in the foreground on the extreme left side of the group, close to the beginning of the measuring tape. That none else than this could be Bodhisattva's head, is proved by the cavity seen in its neck, as no other head has the same feature, although it looks proportionately smaller to its supposed body standing on the right to the Buddha in front row, and also it does not look like having its specified length of 14" (including headdress). This may be due to the effect of foreshortening in the photograph. As far as the clay is concerned, this head too shows the same qualities, as the Buddha's head does and, moreover, there is no cementing element either in the form of clay or of any other material which must be present in the neck cavity, if it were really a terracotta. On the contrary the whole cavity seems to have been occupied with the charred wooden peg. In that case, as has been discussed above, this feature suggests that this head is not originally terracotta, as is the case with that of the Buddha. For all these reasons Marshall seems to have been misled by this or that factor when he has considered them to be originally terracottas. If this is true, we may surmise that he might have been similarly misled in most, if not in all, of those cases, which he has taken as original terracottas. Then it disproves the view or theory that in some cases the images were of unbaked clay throughout, while in others the true terracotta heads were affixed to the bodies made with unbaked technique.

Next, if any ropes or straw or the reeds or something else of its kind exist in the inner areas of the figure, they indicate that the given piece is an unbaked clay image. If the heat is not great, then it would turn the surface harder to mislead a superficial observer to consider it as terracotta, though it would have no effect on such material present inside. Supposing that the heat is great enough either to char or to destroy such material totally, even then they leave their impressions on the inner surface, as is probably the case with our Fig. 28, in the cavity of which two grooves in the spring course are present. If so, such impressions would guide us to determine the given piece as an unbacked clay image originally.

Further, the presence of chaff or particularly of chopped straw or reeds and the like, in the clay, either in charred form or in the form of impressions left after their loss, is a clear indication of the fact that the given image is an unbaked clay figure. True, the chaff is used in the bricks even they are meant to be baked, but that is not the point that nullifies the above statement. It should be remembered that no such material is mixed with the clay with which the pottery to be baked, is made. Why? The employment or nonemployment of such materials is dependent on the purpose. If they are used in the clay of the pottery, the result is the leakage of the liquid after baking the pots, for they may cause holes, when such material is burnt in the fire. In bricks, however, it would help good baking and even if thin and small cavities are resulted in them, that would not be harmful. The cavities of the chopped straw left in the images on account of their loss after baking, would prove disadvantageous, for they give undesirable effects, like uneven surface and planes.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

The method of application of clay is also another clue to the problem. Of course a solid terracotta figure also could be modelled on a core, but the core as well as the rest of the work differs from that of unbaked clay images. The core in the former case need not be of well-defined shape and it is a simple mass, but the only condition is that it should not go contrary to the final form of the image. Whereas in the case of unbaked technique this should be methodically shaped with more thought and calculation, as in our Fig. 18 or 19. In the unbaked technique the final work should be done in several thin layers, gradually bringing out the details, and these layers are applied too with such an interval of the time that the previous layer gets completely dried before the next is applied on it. This is for technical reasons. The image remains unbaked for ever and hence the cracks should be advisably avoided through a gradual work rather than at once. Theoretically there could be no objection against adopting the same process also in the case of terracotta, but that is an unnecessary trouble and moreover, it may also prove undesirable. In case there is any defect anywhere either in clay or in the procedure, the danger arises in firing, namely, the layers applied thinly may get detached in the heat and they may even partly spring up. The common sense suggests that this sort of danger is greater in the cases of work as seen in Fig. 20. Moreover, it often comes to be seen that the layer over the core in the terracottas is not only thick but also a single one. This is done so perhaps for the same reasons as explained above. Turning to our illustration in this connection it must be observed that even if Marshall has not clearly indicated (in the *Memoir*) the head, illustrated here as Fig. 29, to be of unbaked clay, it is not difficult to come to the same conclusion on the basis of layers noticeable in it. Hence it is impossible that our Fig. 30, having so many distinct thin layers could be a terracotta in spite of the fact that its caption in the album (in the Photo Archives of the A.S.I.) specifies it to be terracotta. Again our Fig. 28 (=25-27) may be referred to in connection with this topic, viz. the way of employing clay. It has been already pointed out that the type of work seen at the rear of this head and of its kind, namely the method of piling the masses of clay according to the necessity without levelling, has come into vogue because of the fact that these images have stood against (or near) the wall, and these are to be seen either from the front or from three-quarter views only. The terracottas could also be brought to the similar positions, but the method of just piling the masses of clay without levelling them is not desirable in terracotta, because on account of baking it is necessary that every part remains within a cover. We believe that the cores could hardly be found in terracottas in such an exposed state as in Fig. 28, not to speak of unlevelled masses of clay (Fig. 27). This method of building the core, or of modelling the successive layers and of piling other masses, is also an indication of unbaked clay technique. Again this proves that the Akhnur figures and the kind are originally unbaked clay images, whatever may be their present state.

Lastly, the final, thin and smoothening clay coat, generally called slip, is also a factor that should be considered here. This coat may also be given on terracotta, though often not to be

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

found in practice. But there is a difference. This gives the smooth appearance to terracotta also, but the shiny, fine feeling similar to that of butter is possible only in the examples of unbaked clay images. Judged from this point of view the Fig. 33 cannot but be originally unbaked clay head, though reported to be terracotta and, a comparison between this and Fig. 34 said to be unbaked clay head, may reveal the same. For this reason as well, apart from the one discussed earlier, the Kālawān Bodhisattva head, which Marshall considers to be original terracotta, cannot be a terracotta, but originally unbaked clay head as the body carrying it has been reported to be. Thus the feeling of the surface or the texture is to be taken into account, whenever such a slip is present.

These are some of the factors giving the clue to resolve the question whether a given piece is originally terracotta or accidentally turned to be so, when in fact it was meant to be an unbaked clay image. While discussing these factors, some of our illustrations are referred to, viz. 25 (-28), 30, 31 and 33. Of these, the Figs. 25 (-28) and 31 have generally been hitherto believed to be terracottas; and particularly Fabri had made all those images known to be so, which come from Akhnur, as these two specimens do, even by proposing a fantastic technique. Archaeological literature — including the captions in the photo albums of the A.S.I. — describes the Figs. 30 and 33 to be terracottas. The same references, therefore, explain our grounds for including them here as the examples of unbaked clay images.

FURTHER POSSIBLE CONTRIBUTION OF THE CLAY MODELLING

At the end of this technical account, a related aspect may be mentioned, which possibly has made a contribution to the statuary in general. It should be specified to be possible contribution of the unbaked clay technique, because it is based largely on a surmise of a logical development. Had it been based on some evidence of more or less definite nature, it could have been counted as an addition to those contributions it made, which have been listed in the introductory remarks of chapter XII.

The aspect to be considered now, is the treatment of the folds of drapery in the form of raised ridges, or thin cords or strings. It is one of the two colossi at Bāmiyān, measuring 53 metres in height, that has attracted the attention of scholars on account of a given technical expedient adopted to work out the folds, though the Buddha images having this feature are known,[101] such as those from Mathurā, which are more or less contemporary to it or, for that matter, a colossus of 35 metres high belonging to the same site as that of the former and, a century or so earlier in time (though its folds are not exactly of the same kind, but

[101] Three Buddha images coming from Mathurā school are famous and two are preserved in the Mathurā Museum and one in the Indian Museum, Calcutta; for the former two, see H.I.I.A., Pl. XL, Fig. 158 and G.S., Pl. 141 respectively and for the latter, see A.A.I., Pl. 80. Both the Bāmiyān stucco colossi are reproduced in A.A.I., Pl. 55, A = 35 metre image and B = 53 metre figure, the better view of the latter is found in G.S., Pl. 122.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

represent similar trend). This very expedient provides us also, a better clue; hence this may be explained here.

Both the Bāmiyān colossi are said to have been modelled on stone cores, relieved from the huge cliffs of a row of mountains, by applying on them the clay mixed with chopped straw (or reeds) at first and then by giving one or two (?) final coats of stucco over the clay work. Thus these Buddha images should be considered as stuccos and, if so, this is one of the six or seven methods of modelling stucco figures, which are commonly adopted in the Indo-Afghan school and hence there is nothing new in them as far as this kind of work is concerned. But the bigger colossus shows the following speciality. According to the course of the folds of drapery, wooden nails of the appropriate size are driven into the clay layers,[102] to which the ropes are tied and then the folds are finished by applying a coat of stucco on these (i.e. ropes as well as the heads or tops of the nails). This has been described variously, though the different explanations mean the same in essence, at least in a certain respect. According to one view, the schematic treatment of the drapery executed in this way is entirely different from that of the "Hellenistic" tradition, while, according to another view, "This technical expedient was doubtless intended to reproduce on an enormous scale a late Gandhāra statue in which the Buddha's robe is reduced to a series of strings clinging to the surface of the body".[103] The question, however, is whether this should be traced to Gandhāra stone image or images, or it should be considered in a wider context. To consider it in a wider context means to view the whole development of drapery in Gandhāran and Indo-Afghan schools against the background of early and contemporary movement of art in the rest of India. This cannot be done in a sentence or two, and even a short account of it might lead to misunderstanding, as the task is not only monumental but also too complicated. It is a subject to be investigated independently in its own right. And, moreover, the development of drapery in these schools is a highly sensitive topic to be discussed, for it is hitherto generally believed to be entirely dependent on Graeco-Roman traditions. Nevertheless, some bare outlines could be laid down here, if such a topic — though brief considering its complexity — does not interrupt the continuity of discussion; hence an *Excursus* is added at the end to deal with the issue.

According to the broad conclusions arrived at in the *Excursus One*, the treatment of the folds of drapery in the form of thin cords is seen in many of the *Yakṣa* and *Yakṣī* stone images belonging to a period not later than the 1st century B.C. Thus, as far as the stone medium alone is concerned, this practice was roughly a century older than even the very beginning of the Gandhāran school. It goes then without saying that this development should not be traced to the Gandhāran images, if one is to speak in terms of origin or even in terms of early

[102] According to one source, the nails are driven into the stucco coat only (see A.B.B., p. 13) while, according to the other, as deep as into the rock core (see A.A.I., p. 105), but in view of the practical difficulties the latter view does not seem tenable. For this image, see ibid., Pl. 55B or G.S., Pl. 122.

[103] For the former view, see A.B.B., p. 13 and, for the latter, A.A.I., p. 105 (also vide p. 81 and note 15 on p. 91).

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

examples. If one has to speak in terms of immediate inspiration, there is no evidence to point to any particular specimen. In the circumstances it seems advisable to conclude that the drapery was treated in that particular way in Bāmiyān and other similar images in a tradition prevalent already for centuries not only in the domains of the Gandhāran and Indo-Afghan schools but also in many other regions lying far away from each other.

Now the question arises, why so much painful and laborious job of cutting string-like thin folds should at all begin with stone. It is painful and laborious, because the masses to be removed in this process are too great in comparison to those to be retained, that too in a thin and long form. This is the case even with the workers in wood, although their job is not as hard as that of the stone carvers. True, we do not yet know any extant clay images in which the ropes are used to work out the folds of drapery. Nonetheless we may not be wrong in inferring that this style of executing them probably starts with the unbaked technique of clay modelling. And, in all likelihood, this bigger Bāmiyān stucco colossus suggests this development, for after all the use of ropes is not associated with stucco technique and, on the contrary, it is one of the seven different materials with which the clay image is modelled, as is seen in the previous chapters. Thus this device is a borrowed one in the case of stucco work. Likewise, if it is an imitation in the case of stone images as well, that would be understandable, for once the fashion comes into being with any material, then one takes pains to cope with it, however hard the work may be. In this way it seems most probable that the string-like treatment of the folds of drapery originally began with clay modelling already before the 1st century B.C., but in the present circumstances it is impossible even to infer in which part of the country it started for the first time. In spite of the lack of archaeological evidence it need not be considered an impossible development at such an early period, for there are some literary evidences, probably suggesting still earlier age, not to the clay modelling in general, but even to this particular kind of technique, to which topic we shall return again in the chapter XV. If all this is true, then we should consider this feature, viz. the method of executing the folds of drapery in the form of raised ridges with or without the help of ropes, as one of the contributions that clay technique made to the statuary in general.

CHRONOLOGICAL ASPECTS OF THE IMAGES DISCUSSED

In the present circumstances there is not much new to be added to settle the chronological aspects of unbaked clay images, except in the case of Ushkar and Akhnur images already referred to and so-called Shāhi "terracottas". Hence the following section is partly the recapitulation of the points mentioned in different preceding pages and, this too is highly necessary, for up to now there has been no connected account, even a brief one, of the chronology or sequence of the unbaked clay images hitherto discovered. Whenever it is stated that the chronological issues of the *images discovered hitherto* are to be tackled, the problem arises immediately for the following reason. As has been stated at length, possibly a huge number of them

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

have been discovered already, yet for unfortunate reasons they have been passed under different designations. It is outside the scope of this investigation to settle that riddle, although we could have profited by having probably some more technical data to include in this work, had such a problem been solved previously even to a limited extent. For this reason no one should expect that we have to solve the problem. Of course we might have made a separate attempt in that direction, had the conditions been favourable for performing that task (and it has also been explained how this task is beyond our means). Hence the following account is related only to those examples which have been considered as unbaked clay images on some evidence and as such have been included in the previous discussion.

The fragments discovered by Cunningham in the apsidal temple at Sirkap, are very important for several reasons, although he was inclined to believe them as terracottas, which in fact were not. First, these were discovered from one of the earliest temples in Taxila, i.e. they belong to the very early phase of the Gandhāran art in the 1st century A.D. Secondly, according to the estimation made on the basis of the fragments, at least one of those images, was over three metres in total height in its unbroken condition, in other words, approximately double the life-size. (We shall have shortly to come back to the latter point again.) A few figures belonging to the 2nd century A.D. were found in Shotorak while quite a number of fragments, assignable to the latter half of the 3rd century A.D., came to light from the Cave G, representing the earliest phase at Bāmiyān. Dharmarājika *Stūpa* at Taxila, one of the most important monuments in that part of the country, yielded us some specimens, datable to the 4th century A.D. An appreciable number of images were found in other centres, such as Mohrā Morādu, Kālawān, Jauliān, etc. Of these, in the last two sites they were preserved better than anywhere else in the Indian centres of the Indo-Afghan school, for even the groups were intact here, though with detached heads found nearby. They can be safely dated to the first half of the 5th century A.D., though there is a possibility that a few of them might have in fact belonged to a few decades earlier than that. Assignable to the same date as above are also the creations from Tépé Maranjan.

Now we are to discuss the dates of images that came to light from the sites of Fondukistan, Akhnur and Ushkar, besides the so-called Shāhi "terracottas", of which the provenance is unknown and only inferred to be Shāh-jī-kī-Ḍherī, Kaniṣka's *Stūpa*, near Peshawar. Unlike the previous instances, in these cases we should go into some details regarding their age, as the positions taken by some writers demand it.

FONDUKISTAN: Dating the Fondukistan images to the 7th century A.D.,[104] Hackin remarks

[104] On the basis of the coins Barrett suggests (O.A., Vol. III/2, p. 57, see also note 17) that these cannot be earlier than A.D. 657, thereby placing them towards the end of that century. Of course the style also is not a sure ground; nevertheless, if there is enough material for comparison, the conclusions could be drawn in the field of art, in a better way, on its basis than on the evidence of the coins, unless they are found in special situations. Hence it is doubtful, if Barrett's suggestion could contribute to the precision anymore.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

that their technique is that of Central Asia.[105] He has made this observation at a time when nothing of the Indian technique has been brought to the fore (though the clay images have been discovered long before), and also at a time when the Central Asian technique has been briefly noted already. We should, however, point out that, so far as the photographs allow us to judge, there is nothing in their technique to consider it as typically Central Asian. If it comes to their style, there is certainly some limited amount of Central Asian, or specifically speaking, Kucān influence on them, which has been hitherto neither sufficiently realized nor explained. Except in two[106] cases — the shape of the trunk and the mode of the drapery — we do not think that there is anything special in these figures to be attributed to the Central Asian art. The rest of all the features do not differ from those present in the images belonging to its own entire region. In view of this it is difficult to explain how these Central Asian or Kucān influences became possible.[107] In short, the Central Asian influence is recognizable in Fondukistan, but the reasons for it cannot be explained now. Thus for all practical purposes it can be taken for granted that the Foundukistan images belong to the 7th century A.D. and, in fact, many of the writers take it as a fixed and starting point in assigning the dates to the creations of some other centres.

USHKAR: As far as the Ushkar unbaked clay images are concerned, they are placed in the

[105] D.R.A.A., p. 49.

[106] It must be said at first that as against a taste generally prevalent in the rest of India to render the sides or the regions of the ribs in a clean way and with the contours obliquing gradually from the armpits to loin (a taste expressed in the Sanskrit phrase: *pārśvau pramārjitāviva*, the meaning of which we are unable to render into English properly), in Gandhāran and Indo-Afghan images the sides were generally treated with a slight curve, convex outwardly. This feature is also seen in Fondukistan images. Not only the chest, but the trunk as a whole is generally wide in Gandhāran and in Indo-Afghan images while they do not have proportionate length and, as a result, they look as if tending to square; this is more prominently seen in the Gandhāran stone images. Seen against this general tendency the trunks in the Fondukistan images are quite elongated, the chests, though wide, are not as wide as in the former, while at the same time the loins are more narrow. Consequently they look cylindrical. This feature is too common in, if not the characteristic of, the Kucān creations, or especially, the Kucān style of the wall-painting. Secondly, the treatment of drapery in grooves, not too wide, is not in any way a monopoly of Kucān art, but it is much more common in Central Asian art than in the Indo-Afghan school. In spite of the obvious similarity between the Central Asian and Indo-Afghan draperies, the former has its own specialities, especially in the form of arranging folds. That is the type, which we can see in Fondukistan images.

The twisted lobes of the hair falling on the shoulders are already seen in Gandhāran stone images; hence, as such, they need not be attributed to the Central Asian influence, although one may investigate whether there is any influence in fashioning them in a particular mode or form. We leave out this item for the present.

[107] If the usual theory of migration, which is rather a short cut, is to be applied to this case also, there is an excuse for it in the form of political troubles in Kucā at this time. History teaches us that by the middle of the 7th century the political power in Kucā Kingdom, was on the rough seas before it was fully and finally sunk within a few decades. Thus a creative, proud and dignified nation unfortunately went into dark for ever, which brought the total end to all creations in the land. In case one tends to explain that there was a migration of artists from Kucā to Afghanistan, one has to face the difficulty. If the Fondukistan images were the works of migrated Kucān artists, why should the Kucān influence be limited to two or three features and how the rest of the features could be the same as found in the other creations of the region?

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

second quarter of the 8th century A.D. Some writers consider this dating final.[108] But it is not yet so satisfactorily a settled matter. This dating is based on the assumption that this particular monument was the same that Kalhaṇa recorded as having been built by Lalitāditya. This site still waits for a full-scale excavation, and no evidence came to light even in an accidental manner to identify it with certainty. It might be possible that there were several *Stūpas* constructed at this place at different times and by various persons. If that were the case, how can it be said that this particular *Stūpa* was the one built by Lalitāditya? After noting this fact one may accept this dating for practical purpose. Fabri proposes a theory according to which the "Gandhāran" (in the old sense) artists came to Ushkar, when they had no patrons in their native regions and when they heard of Lalitāditya's endowment (fantastically enough he describes all this as if it happened before his eyes), to execute all these images; hence they "bear a marked resemblance to the type of art that they practized in Gandhara".[109] This sort of observation is based on the old belief that "Gandhāra" is the cradle of all art either in Kāśmīr or in many a number of places, but actually there is no substantial evidence to support it. In the absence of any specification of the bearing the "Gandhāran" art has on these particular images, the statement has no weight that it needs. What he says in the following paragraphs to substantiate this theory, is unhistorical and meaningless too. Within the Gandhāra and Indo-Afghan schools there have been changes and yet they have set certain standards long before the 8th century, which have continued within and exerted influences on neighbouring regions. These influences, once entered into and firmly established, have continued coping with the changing circumstances. It is in this way that certain "Gandhāran" tendencies could be felt also in the Ushkar creations, but there is no point in saying that all this goes to the credit of "Gandhāran" artists. In spite of that the new currents and cross currents may flow, but one has to show them by illustrating fully. Hallade, on the other hand, considers that the Ushkar pieces are influenced "by India",[110] by which she seems to indicate that the Gupta terracottas

[108] For example, Fabri and Barrett, see Mg., Vol. VIII/2, p. 59 and O.A., Vol. III/2, p. 58 respectively.

[109] Mg., Vol. VIII/2, pp. 59-60.

[110] G.S., p. 152, she observes here: "The Ushkar heads, tensely executed, with arched eye brows, elongated eyes, and mannered elegance, are clearly influenced by India, which also affected similar productions of the monastery of Fondukistan in Kapiśa (seventh century)." This description, however, does not fully tally with the real Ushkar specimens. Actually she has not reproduced any Ushkar pieces. In fact in this respect there is a clear misunderstanding. In an attempt to establish the provenance of the so-called Shāhi "terracottas", Barrett speculates certain things, when he considers Ushkar as one of the possibilities, but does not stick to it; finally he infers that they may come from some place in the North-West India, holding it at the same time probable, on account of the fact that they were offered by a dealer in Peshawar, that they might even come from the Shāh-jī-kī-Ḍherī (O.A., Vol. III/2, p. 58, column 1, including footnote 23). She is aware of this fact, yet she seems to have been somehow misled by it. While reproducing one head (Pl. 120) from the so-called Shāhi "terracottas", she remarks in the next paragraph thus: "Fine heads in the British Museum found in Peshawar are linked with those from Ushkar". Of the so-called Shāhi "terracottas" she reproduces two more, Pls. 176 and 178. In the captions of the former two she specifies their provenance as "North-West (?)" while in that of the last one (Pl. 178, p. 224, also see p. XV) she mentions Ushkar as its place of origin, which in fact is not (see the same head reproduced by Barrett as Fig. 5, O.A., Vol. III/2, p. 56). All this clearly shows that she takes it for granted that the style

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

from Ahicchatrā have a bearing on them.[111] Gupta style finds its way into Kāśmīr already earlier and in that sense those trends may be somewhat discernible in them, as the "Gandhāran" ones which have persisted there already for centuries. But when she sees close relation between the Ahicchatrā pieces and Ushkar examples she has obviously been guided by a misunderstanding of the respective techniques to be identical, viz. of terracotta. Apart from that there is also a misunderstanding, on her part, of the style of Ushkar, when she takes it for granted that it is totally identical with that of so-called Shāhi "terracottas". So far as the bodily features are concerned, we do not think that there is any special connection between these two centres — Ushkar and Ahicchatrā. Thus for the historical reasons these figures may have a vague affinity with both the styles of Gupta and "Gandhāra" (in its old sense), but these tendencies are not strong enough to call the immediate attention of the scholars. Similarly, in a faint manner these have also the Tarimian features, which at present appear so divergent that the affinity appears to have once with Khotan region, again with Kashgar region, and so on. Unless a close study is made, it is difficult to specify these tendencies. There should not be any wonder, if such affinities are present in them. There has always been an intercourse between Kāśmīr and Tarimia (East Turkistan), at least from the early centuries of the Christian era onwards. But, without taking account of even such significant events as Kumārajīva's study for several years in Kāśmīr, etc., some writers tend to attribute such an intercourse to a very late period. Be whatever it may, coming to the particular century with which we are now concerned, it should be noted that Lalitāditya's Chief Minister is said to be a native of Kashgar. If so, on two assumptions — firstly, that the present Ushkar *Stūpa* was built by Lalitāditya, and secondly, on account of the fact that Kāśmīr at this time had closer links with the native region of its Chief Minister — one may take Kashgar region as the starting point for the new investigation. By way of warning, here it may be added too that the use of unbaked clay technique in Kāśmīr need not be attributed to this contact with Central Asia, for there are reasons to believe that it has been known to the people in Kāśmīr already a few centuries earlier and, moreover, in all likelihood, it has been more ancient practice in India in general.

FONDUKISTAN AND USHKAR AS STARTING POINTS: Taking these two dates — 7th and 8th centuries A.D. as the age of Fondukistan and Ushkar respectively — as cardinal points, above-mentioned writers have tried to give a date to the Akhnur pieces and to the so-called Shāhi "terracottas". Before going into the details of this problem, it is better to discuss a few general points, which may even hint at the reasons for which the previous writers went in a particular direction. First, all the previous writers have believed Akhnur and Ushkar figures to be terracottas, that in itself may not be a fault, for their present baked and half or even ill baked

of the Ushkar figures and that of the so-called Shāhi "terracottas" is totally identical, and hence, she describes the Ushkar figures in the above manner, basing herself on the so-called Shāhi "terracottas". That is why it does not tally with the Ushkar figures, reproduced by Kak (the references are given in notes 12 and 16 *supra*). In this respect she seems to have been misguided by the Barret's diplomatic phrases.

111 This is perhaps clear from her caption of Pl. XV, G.S., p. 140.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

condition is misleading, though one of them, viz. Fabri, who has made investigations on the spot even by digging trenches at Ushkar, could have doubted their being originally terracottas, but instead he has explained their technique in a fantastic way. But there is no reason, whatsoever, for any misunderstanding in the case of unbaked clay images from Fondukistan, yet Barrett calls them terracottas, which is a gross error, and this leads him to propose the intermediary stations of terracotta schools, which is a myth.

Even if Ushkar and Akhnur figures were originally terracottas, one may search for the same material to discover specific features characteristic to this technique, but there is no point in looking for only terracottas in connection with the study of other aspects. In spite of the tendency to look for only terracottas, Fabri and Barrett have failed to see the importance of the images unearthed from various sites in Taxila and other sites in the North-Western India, which went up to now under the caption, terracotta, although they refer to them in passing or rather in a step-motherly manner. This leads them to arrive at not very happy conclusions, though they have done it with enthusiasm. Fabri says that "The discovery of the baroque terra-cotta school of Kashmir (700—736), one of the most strikingly and most uniformly lovely achievement of the whole of Indian art history makes strange reading."[112] Although the importance of these figures cannot be denied, there is no reason for expressing so much enthusiasm about them, when the significance of previous creations in the same medium, is realized. Baroque in the European art history is unfortunately not a synonym with big dimensions and, on the contrary, it implies and characterizes a host of things especially those connected with the architecture (as a matter of fact all periods — except the modern one — in that art are mainly connected with architecture and extended to the sculpture and painting which go along with it). It is difficult then to understand, if it is not his journalistic style what else had led Fabri to call it Baroque. Even if the big dimensions alone could be the guiding factor to call it Baroque, it happened already quite earlier. We know that the tendency to fashion universally gigantic images has already started with Haḍḍa in the later half of the 3rd century A.D. These cannot be neglected for the simple reason of their being stuccos, as any words designating styles or periods do not or should not confine to any particular medium. For the sake of argument even if these are left out, we also know that several clay images, dating from the 1st century A.D., were discovered in the apsidal temple of Sirkap and at least one of them measures even over three metres in total height. However, it is more strange that Barrett too gets the same impulse and designates the so-called Shāhi "terracottas" as the "Rococo art of the north-west";[113] it serves no other purpose than to show that he was in no way dragging behind Fabri.

Both the authors — Fabri and Barrett — also consider that there exists a separate terracotta school, if not also schools. Whenever one calls a school, such a designation implies that it is

[112] Mg., Vol. VIII/2, p. 53.
[113] O.A., Vol. III/2, p. 58.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

distinguished from the others by different characteristics. We do not yet know of any images of other medium either, from Ushkar or from Akhnur, to see how the so-called terracottas are different from the rest. The so-called terracottas and stuccos unearthed from the different sites of the Indo-Afghan schools, take for example those of Jauliān and Kālawān, do not differ from each other in general style and this is at once revealed, if a comparison between them is made by opening Marshall's *Taxila*. If there is any slight difference, that is attributable to the character of the medium; but both kinds of creations equally share the general features of the age and given centre. It has been also the general trend in India that the artists have worked in more than one medium; and it has not been rare that even the builders of the architecture have been also the sculptors or even painters. Supposing that a group of people have worked only in clay while the others only in stucco or stone, even then there is little chance for their having different schooling, if they are contemporaries. For all these reasons it appears that there has been no terracotta school or schools. One may propose such things, if a patient study leads to that sort of conclusions, but it would be too hasty to talk of the separate schools every now and then only on the basis of a few pieces, that too without making any attempt to observe them in their wider context.

The last general point, which has more bearing on their way of dating than the previous items, is the similarity between the "terracottas" of different centres as Barret and Hallade — in particular the former — see it (*supra* note 110). It has been taken for granted that there is an unquestionable resemblance between the images coming from all the centres — Fondukistan, Akhnur, Ushkar — and so-called Shāhi "terracottas", but it has not been explained. We have already established with technical evidence that Ushkar and Akhnur images, like those from Fondukistan, were unbaked clay figures in their original state. This medium, i.e. unbaked clay, has its own feeling and texture which reflects in all of these creations, but that need not be counted as similarity in the stylistic considerations, especially when all of them have been executed with the same technique. In space and time they are somewhat separated, but this gap is not too great, hence a faint similarity may also be discernible in this or that aspect. That the similarity, however, is very limited, would at once be clear, if the reproductions are placed side by side. Their difference is several times greater than their similarity. In the circumstances it would be misleading to make the resemblance between them as a starting point for dating.

AKHNUR: Now we should turn to the date of Akhnur images. Fabri has considered them one generation older than those of Ushkar, i.e. to date "just around 700 A.D.",[114] but the

[114] Mg., Vol. VIII/2, pp. 61-62. His reasons for this dating are three: i. "rubble wall" of the monastery, "built *exactly in the same manner as that of Ushkar*", ii. three Gupta copper coins of "about 500 A.D." found in the nearby field, and iii. the bricks found *in situ* "are of the size that were used in the sixth and seventh centuries A.D." Of these, only the last has some real value, but being suggestive of a wide span of time, two centuries, it would not support his contention, as by the same token one may date them to the 6th century rather than to the end of the 7th century A.D. If the coins found in the nearby field are of any value, which we doubt, they contradict his dating rather than support it, in spite of some explanation he gives, which does not carry

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

reasons given by him for this dating are not quite convincing. Hallade feels that "The date seems very late" and at the same time she considers them "much later than those of Haḍḍa and Taxila."[115] But she remains vague, not only because she has not suggested any specific time, but also because she has repeated the same date in a caption, viz. end of the 7th or early 8th century A.D. Barrett thinks that Akhnur figures are "roughly contemporary" to Ushkar images, which comes to mean the early part of the 8th century A.D.[116] All these suggestions do not practically differ much from each other and behind all these remains a belief, though untold quite categorically, that the "terracotta school" is a late comer in the field, hence they cannot be earlier than this date. First of all, these are not terracottas, but originally unbaked images. Clay, as is stucco too, as a sculptural medium, is in no way later than stone in Gandhāra school; the number of extant examples is immaterial here. The significant rôle and position of clay in the early part of the Indo-Afghan school (c. 250-500 A.D., which is more important than the rest of the part — 500-c.750 A.D.) is indisputable, which Fabri and Barrett have failed to note, in spite of their passing references to terracotta, in their over-enthusiasm for the material with which they are dealing. There is no special reason to think that the case is different in the neighbouring regions of these schools, viz. Jammu and Kāśmīr. It is in this light (i.e. without any fixed notion that for the reason of their being clay objects they should be later in age) that their date should be suggested. True, the lips, etc. are treated with curves, yet the Akhnur figures in fact are not sensuous, as they appear to be in dramatized presentation. At times the faces are fuller and rounder, but on the whole they are not. In the majority of the cases their general features are suggestive of Gupta style: planky fore-head; towards chin gradually tapering contours, yet without pointed chin; wide mouth falling slightly outside the lines of the inner corners of the eyes, yet not reaching the lines of the pupils; sometimes even with short looking mouth regions (= from the end of the nose to the chin); etc. Nevertheless they do not fully represent the Gupta style of the 4th-5th centuries. The hair in the form of curved rods with incised lines across to represent the curls, is a Gupta feature (at least as is seen here) which does not occur very frequently after the 5th century, is to be found in several of Akhnur examples (as in our Fig. 25 or better in Pl. 121, G.S.; etc.). Further, the floral ornament kept on the right ear of our Fig. 25 (also see Fig. 26 or even Fig. 28), which is supposed to be a bunch of *Aśoka* flowers, is also a feature of Gupta style in Mathurā. This too ceases later on. All these point towards the 6th century A.D. Thus the Akhnur images are likely over a hundred years earlier than the date hitherto assigned to them.

SO-CALLED SHAHI "TERRACOTTAS": Lastly, coming to the so-called Shāhi "terracottas", we must at first note the following. i. The appearance of these figures is that of unbaked clay

much weight. For long centuries rubble and mud together were used in Kāśmīr for architectural purposes and, this might have been the case in Jammu region too. Unless some differences within the use of mud and rubble are discovered, this feature could be of no help for dating purposes.

[115] G.S., p. 152.

[116] O.A., Vol. III/2, p. 58, column 1.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

images, but not the real terracottas. ii. If the photographs could be relied upon, there is an extraneous substance on these heads (especially on Barrett's Figs. 3-5), which is not possible, if they were real terracottas. In case of the unbaked clay figures this is possible. When these heads have fallen to the ground, this extraneous substance has stuck to them and then along with it the heads have been burnt in the accidental firing, converting the extraneous substance as a part of the original clay. iii. The broken neck portions vaguely, but not very clearly, suggest that these have been modelled on a core. (If different views in original or unrestored form, are available, it is possible to come to a definite conclusion, but these are not available.) On the basis of these indications we are personally inclined to believe that they are originally unbaked clay images, yet turned to be terracottas by some accidental fire, as was the case with quite a considerable number of images from the Gandhāran and Indo-Afghan sites. Nevertheless we do not want to assert this point, as we are able to do in the case of Ushkar and Akhnur figures, for we have a more conclusive evidence in those cases, whereas in these cases our proof is not of definite nature. With a hope that in future they may be proved to be so, we may enter into the details of their date and provenance. That apart, they are remarkable productions with an excellent workmanship and unusual elegance. When Barrett has described them to have "piquant charm", perhaps he has said less, for they have an arresting beauty. This itself can be a rewarding factor to enter into such detailed discussion.

While considering the possible provenance of these, Barrett speaks of their similarity with those heads discovered at Shāh-jī-kī-Ḍherī and published by Spooner.[117] But this is extremely amazing. In fact these figures have nothing at all in common with the Shāh-jī-kī-Ḍherī examples, which are inferior in every respect. If one is to depend only on Spooner's reproductions for Shāh-jī-kī-Ḍherī examples, it is out of question that figures reproduced by Barrett could come from Shāh-jī-kī-Ḍherī. Hallade has mistaken, when she considered the style of these figures and those of Ushkar to be totally identical. She is quite right when she sees some Gupta features in the so-called Shāhi "terracottas", but again she does not seem to have much ground, when she tries to connect the figures in question and those of Fondukistan with Ahicchatrā terracottas. Although the last-mentioned represent Gupta creations in general style, they have different bodily features. It seems, however, worthwhile to take a closer account of the present figures and those of Fondukistan on a comparative basis.

If all the British Museum pieces (the human heads) were available, it could have been possible to go into more details. So the only material on which we base ourselves is Barrett's six reproductions.[118] Of these, the two (6 and 7) have slightly different appearance, although

[117] O.A., Vo. III/2, p. 58. A photo similar to that published by Spooner in A.S.I.; A.R., 1908-09, p. 54, Fig. 3, is still preserved in the Photo Archives of the Archaeological Survey of India, New Delhi, Frontier Vol. III, P. 379/ 1908-09; in this photograph an additional head is included and, the pieces are arranged slightly differently.

[118] O.A., Vol. III/2, p. 56, Figs. 3-8. Barrett says that the head belonging to Lahore Museum collection and reproduced by Rowland (A.A.I., Pl. 69) and his Fig. 3 "could easily have come from the same mould" (*ibid.*, p. 58). Whether they can or not, they have really a very close similarity.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

these too share on the whole more or less the same features. This may be either owing to the fact that artist's intention to characterize the different items variously or to the fact that they are of the works of some particular persons in the group of modellers. Similarly, we often refer to the Bodhisattva figure from the Fondukistan images, reproduced by Hallade (G.S., Pl. 177), only because being enlarged its features are more clear, and that particular view is also of more help. Hence it should not be misunderstood that the rest of the figures are of different kind; certainly all have the same features in common, with required variations according to the need. To start with the hairdress, whenever the hair is taken to the sides, it is divided at the centre, where a line forms (*sīmanta* in Sanskrit and Scheitel in German, but we do not know the English word for it). This is not in any way a speciality. What is special here is its width at the front, suggesting a triangle. If the elaboration of the floral wreath and the other pomp of the headdress are left out, the pattern of the combed hair is almost the same in Bodhisattva's head and Barrett's Fig. 3. In both cases it is modelled on the head itself, although the rest of the details of the hair in Bodhisattva is fashioned with the *appliquée* method. In all the cases the foreheads are planky and proportionately wide. In Fondukistan and the so-called Shāhi "terracottas" the eyebrows are curved, but the curve is at the end, i.e. from the root onwards more than half way they run almost in a straight line gradually rising upwards or obliquely and then near the beginning of the temporal plane a powerful curve takes place (i.e. it is a curve of the *bhrūpuccha* according to the iconometric terminology and this type of curved brow is called *caturabhrū* in dance terminology). This is not the case in the Ahicchatrā figures. The eyes in both the cases have narrow opening and yet not long. The eye balls, in fact, are not big. The upper lids of the eyes are only slightly wider than the lower ones while both are slitty. They are thicker too. The eye balls within the opening of the lids are indifferently finished, or at least their surface is not clean. None of these characters are to be found in Ahicchatrā figures. The areas between the folds of the upper lids and the brows is quite wide, especially towards the outside on account of the ascending course of the latter. This feature is not found in the Ahicchatrā to such an extent, but there is difference too: the ridge in the Ahicchatrā figures is heavy and fully rounded while in the images of both kinds in question these areas are only slightly blended, hence these appear fleshy while the former bony. The face in the so-called Shāhi "terracottas" and Fondukistan images is widest on the line running across the lower areas of the eyes. This is because the region of the zygomatic arch is prominently treated all along (this can be better observed in G.S., Pl. 177 and A.A.I., Pl. 69), as a result the contour inclines inside sharply in both the directions: above, in the templar region, and below, in the planes beside the mouth (or precisely behind what are called *gaṇḍas* in Sanskrit). In spite of all this the malar regions are not heavy, though somewhat rounded up in some cases (see Barrett's Figs. 4 and 5). This is totally absent in the Ahicchatrā examples. The *alae* or nasal wings are thick and fleshy, hence the end of the nose is wide. Again this is not the case with the Ahicchatrā figures. The mouth is short only slightly extending outside the width of the nose, whereas in the Ahicchatrā specimens it is quite wide. The lower lip is prominent, wide and

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

squared up like in the Ajanta figures. Lower border of the lower lip lies almost at the middle point in the region between the end of the nose and chin. Actually the mouth is not inset, but it gives such an illusion, because the muscles (buccinators) outside the corners of the mouth are treated a bit bulging and round. The chin is heavy, often tending to square (but only at times somewhat pointed, as in Barrett's Fig. 4). The double chin does not hang, yet appears important, for it is wide and has clean and somewhat rounded plane. The details of the ears too tally very much. Whether in all cases, in the above description, we have mentioned the names of Fondukistan and so-called Shāhi "terracottas", or not, these features are common to both, that is why so much detailed analysis. Whenever we had a point of contrast in the case of Ahicchatrā, we mentioned that name. It does not necessarily mean that there is a similarity, if we have not mentioned that name.

Are all these common features, particularly so many of those belonging to the body, not sufficient to point out the very close connection between the Fondukistan figures and so-called Shāhi "terracottas"? Hence either the very site in Fondukistan known already or yet an unknown site in the same region, is most probably the place of origin of the so-called Shāhi "terracottas", but certainly not Shāh-jī-kī-Ḍherī, despite that these have been purchased from a Peshawar dealer, for after all the dealers could supply even over-seas specimens and, if the objects have changed several or even some such hands, it becomes impossible to find out the place of origin, as they have not been "educated" dealers after all.

Does this similarity also suggest their common medium? If the so-called Shāhi "terracottas" are also originally unbaked clay images, the question arises whether these could come from the Fondukistan monastery, when several figures, not having even a trace of slightest burning, were discovered in it. We do not remember, whether Hackin and other excavators of the site have reported any part of it to have become the object of conflagration.[119] If there is no such trace, then on account of their being burnt one has to search for another site for their origin, maybe in the same area or at some distance in its vicinity. As the images having so much close relation, are unknown, it is reasonable to think that these so-called Shāhi "terracottas" come from no other region than in which Fondukistan is situated. Should these by any event originate from somewhere else (which is unlikely), now there is no clue to suggest any other place, except saying that on account of predominantly Gupta features noticeable in these pieces their probable place of origin can be anywhere between Fondukistan and Bihar. Coming to the question of date, one should note that the so-called Shāhi "terracottas" with their exquisite workmanship and clarity of features, are undoubtedly better pieces than those known up to now to have come from Fondukistan monastery. This perhaps suggests the difference of generation of the modellers than their relative ability in the same generation.

[119] When this question came into our mind, the necessary literature was not within our reach, and there was no possibility of getting it even in case we went to Calcutta by travelling a hundred miles; hence we were unable to check up this point.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

Even if the difference of generation is accepted as practical hypothesis, it should also be naturally taken for granted that these generations were trained in the same tradition, otherwise such a closeness of style could not have been possible. The next question is whether the generation that executed the so-called Shāhi "terracottas" were predecessors of, or successors to those modellers of Fondukistan monastery. Until some clue is available, it would be anybody's guess. Hence, availing of this common right, we are inclined to place the so-called Shāhi "terracottas" around 600 A.D., not with a view that the best must be older, but purely intuitively.[120] (It is regretted that for the want of a better designation, the phrase so-called Shāhi "terracottas" had to be repeated till the end, though in itself is a bad one.)

To resume taking the brief chronological account which we have suspended for a while with the Kālawān and Jauliān figures belonging to the 5th century A.D., and to follow the continuation, century by century, of the statuary in unbaked clay, we should note that the Akhnur pieces are the examples of the 6th century creations (while the so-called Shāhi "terracottas", if they are unbaked clay figures, may be reckoned to belong to the period around 600 A.D.). Of the 7th century we have the images from Fondukistan monastery. Lastly, the Ushkar pieces represent the 8th century A.D.

Thus, the archaeological work gave us, without the knowledge of most of the archaeologists, the examples of unbaked clay images, belonging to a long period beginning from the 1st century A.D. up to the 8th century, both inclusive, may be fewer in one century than in the other, but of all the centuries, from the Gandhāran and Indo-Afghan sites as well as from the neighbouring regions of Jammu and Kāśmīr. It need not be taken as an indication to the event that afterwards this medium ceases to be, because owing to the misnomenclature and misleading factor it is generally believed up to now that there were no examples of this medium and technique, in spite of the existence of so many creations as discussed above. It may be hoped, if archaeologists try at least now to care to be careful, that further examples belonging to all the succeeding centuries may come to light, and who knows how many of those passing up to now in the name of terracotta and stucco, would ultimately turn to be unbaked clay images after the re-assessment is made on the lines suggested here.

COMPARISON BETWEEN THE TEXTUAL AND ARCHAEOLOGICAL ACCOUNTS OF UNBAKED CLAY MODELLING

The account, given in this chapter, of the unbaked clay modelling is entirely based on the archaeological material, i.e. the finds made in the excavations, which represent the actual

[120] Regarding their date Barrett states: "In any case the British Museum group is an important addition to the Rococo art of the north-west during the 7th and first half of the 8th century A.D." (O.A., Vol. III/2, p. 58). More or less this is the period to which Fabri assigns the "Baroque"; this means that we have two styles at a single stroke.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

creations of ancient times — from the 1st century A.D. to the 8th century A.D., both inclusive. Hence there can be little chance that it could be as exhaustive as the account given in the previous chapters, 2-11, on the basis of literary sources, which are devoted to describe the entire process minutely. This is for various inherent reasons: As has been noted already, we may not get so many examples with broken areas to reveal to us each of the technical aspects, which number of hundreds. There is also a chance of the archaeologist's failure to recognize the meaning of this or that point, even if it comes to light, in case he is not sufficiently aware of the technical aspects. The same unawareness may also lead him to neglect the different aspects, otherwise he might record them faithfully, even if he is unable to interpret them and, this has actually happened, as has been pointed out earlier at different places. These are enough to suggest the limitations of this sort of investigation. Hence the above account cannot but for the present be a very limited one, although there may be a chance of enlarging it to some extent, if the material already brought to the light, yet passing in different names, is re-assessed on the lines suggested earlier. Consequently there remain a considerable number of points, either ambiguous or altogether unknown, to make a real comparative study between the ancient practice as known from the actual creations and as can be studied from the literary descriptions. An attempt has been, however, made in the previous pages to arrange the archaeological material methodically, i.e. to present it in the same sequence in which an image is modelled, which in fact is the method adopted in the ancient texts. In spite of all these limitations it may be a little enlightening to compare the accounts derived from these two sources. (The previous discussion is based not only on the Gandhāran and Indo-Afghan schools, but also on the practice seen in the images coming from Kāśmīr and Jammu. The following remarks, therefore, are related to all these regions and they are mentioned collectively, often without repeating the individual names.)

As to the armature, it has been noted that no armature of any material or its substitute is reported from the Indian regions of the Indo-Afghan school, and it may not be taken too seriously, for it seems to be the failure on the part of the archaeologists rather than its real absence. Whatever it may, it is not so important, for there is ample evidence for the use of wooden armature in the images coming from the Afghan regions. Accordingly, the *śūlas* of the arms and legs are round as described in the textual account. It is known for definite that the *vaṃśadaṇḍa* too is round in the Indo-Afghan school, which is one of the alternatives prescribed in our source books. It appears from one Akhnur example that either a square or hexagonal shape is adopted to it (though none can be sure of either of them). Thus in these points there is a clear similarity which need not imply that in other respects there is not. It is not yet known whether *vakṣodaṇḍa* and *kaṭidaṇḍa* are used in these regions; nor we know anything regarding the joints of *śūlas*. The use of support or *upaśūla* is reported to have been employed, but practically much remains obscure. From the archaeological literature one gets the impression that it is no more than a simple dowel and we have already pointed out that

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

it would not do in the case of clay figures in which there is a wooden armature. In these circumstances it would be hasty to say that these two accounts differ in other respects.

The question of using *aṣṭabandha* prescribed by the ancient texts arises only in the case of those clay figures which are modelled on a wooden armature. If the modellers of these regions — Indo-Afghan sites as well as Akhnur and Kāśmīr — employed it at all, it is now too difficult to trace it from the archaeological finds, for it is a kind of varnish applied to the wooden armature and subsequently covered with clay. Nevertheless it should not be assumed altogether impossible to trace it; perhaps by a lucky circumstance one may find it in some way or the other, if the known examples of wooden armature have been examined sufficiently, which does not seem to have happened, or if those, may be discovered in future, are studied carefully. We, therefore, have to postpone any conclusion regarding the use of *aṣṭabandha* in these regions.

The employment of ropes to fill the bulk and to hold the clay has not yet been noticed in the images of the different regions under consideration. But such a practice can only be inferred from one Akhnur head, on the basis of the impressions left in a cavity.

Two varieties of clay are prepared in these regions. The chopped straw is added to the variety with which the inner areas are shaped, and we have pointed out that this chopped straw corresponds to the coconut fibres which are, according to the textual account, to be cut and mixed with the clays to be used for the lower layers. (The other variety is touched below.)

Nobody has pronounced so far a word about the use of *śarkarākalka* as such in the images of all these regions. It would mean taking things too far, if we on our part imagine the second variety of clay to be *śarkarākalka*. It may or may not be, but it needs examination before any definite conclusion is drawn. In this connection an important point must be brought to the foreground. According to the ancient texts cotton (*kārpāsatūla*) should be added to the "first" variety of *śarkarākalka*, the variety which is to be employed for the upper coating, but not the topmost one. This layer is the first of those four which are applied with *śarkarākalka* and thus though the lowest of the four layers it is, yet this is the main one, for in this the bodily details are worked out to a great extent and other three are applied thinly. Apart from the animal hair used alternatively (?), cotton is mixed with the second variety of clay used for the top (as yet uncertain if it is the topmost) layer in the Indo-Afghan school too. In this way there is a similarity in these two practices at least with regard to the ingredient of the material meant for the upper (but not the topmost) layer. Perhaps it would be useful, if some specimens of the clay applied as the upper layers, could be put to chemical test.

The practice of pasting cloth on an image has not been yet traced in any of these regions. For certain nor is it to be seen in Central Asian clay figures, though one or two fragments made

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

of mixed material have it.[121] Presumably this can also be true in the regions in question, in other words even if it is traced in future discoveries, the use of cloth in these regions does not seem universal. This may be attributable to the fact that unbaked clay images are fashioned in these regions more for decorative and edifying purposes, hence in greater numbers too, than to be worshipped in the temples or chapels, and this great number may require a huge amount of cloth. This may be the reason for the absence of cloth. If this assumption is correct, this item may be taken to be a point of contrast between the practice as found in these regions and the textual account, though perhaps explicable in the said manner.

As for the colours, as in the case of painting, they are supposedly prepared from the earths or minerals for the application on the clay figures of these regions. In a comparative study more important points than this are the way in which they are coated and the binding medium added to them. Some of the examples so far discovered have colours which have not yet been closely examined, so the comparison in the aspect of the method of application is impossible. With regard to the binding medium chemists can throw some light, if they test the traces of colours or even the white applied for grounding, as the binding medium mixed with it is not supposed to be different from that added to the colours, so it is desirable that museums and archaeological departments should take steps in this direction. Until then a comparative study remains inconclusive.

To conclude, the technique of clay modelling, as it is known today to have been practised in the Indo-Afghan regions, Jammu and Kāśmīr, is not exactly the same as that described in the ancient texts, when it is looked at from an arithmetical point of view, but the similarity in a number of aspects would prove it to be very much akin to it. From the previous pages it has become obvious that much work on this subject remains to be done in future. If the matter is further and thoroughly investigated, the difference which now appears great may diminish to the point that it can be considered to be a simple variation determined by the local material conditions and considerations.

121 As for instance, the hand, bearing the No. Kao. 012, and reproduced in Im.A., Vol. III, Pl. VIII; for its description, see Vol. II, p. 597.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

Chapter XIV

THE PRESENT PRACTICE OF UNBAKED CLAY MODELLING

THE TRADITION OF CLAY MODELLING IS STILL ALIVE

The methods of clay modelling, similar to those explained in the previous chapters, are still applied today.[1] It is said that clay figures are modelled at present in certain provinces of India, such as Uttara-Pradeśa,[2] Mahārāṣṭra, and so on. We have, however, no personal and detailed knowledge of the methods of the said regions, though it can be assumed that they would not be altogether different on the whole in spite of the possibility of minor variations. It also appears highly probable that this practice in other regions is not as widespread as in Bengal. It is the tradition practised in the last-mentioned province, which we have observed personally. Hence we confine ourselves in this chapter to the technique of unbaked clay modelling as adopted at present in Bengal.

There are a huge number of temples of burnt brick in this province, particularly in the districts of Bāṅkuḍā, Bardhamān, Bīrbhūm, etc., though most of them are very late examples dating from the 17th century A.D. onwards. All decoration — whether of figural or floral or of other kind — of these temples is entirely in terracotta. In view of this, it must be clarified that here too by clay modelling the terracotta is not meant. As has been said in the Introduction itself, the terracotta is outside the scope of this book. Hence it goes without saying that when we have said that clay modelling is alive in this and other provinces too, we mean only unbaked clay modelling. Incidentally it should also be pointed out that the employment, in this province too, of terracotta and unbaked images for the purposes of decoration and worship respectively confirms that the injunction, which we have noticed in the *Āgama* texts, not to use terracotta for the worship at large, is universally observed in India rather than only in South India, from which those texts emanate. In other words, the texts

[1] Foucher says (M.A.S.I, No. 7, p. 38) that even after the stone carving began to deteriorate, the modelling in clay and stucco kept their standards for a considerably long time in "Gandhāra" (in the old sense), and in the same connection he adds further: "Nor is this altogether surprising. While India of today has few good stone-carvers, it may still boast of very clever modellers, who have not lost the tradition, and produce plenty of small coloured clay-figures, often very skilful and spirited." He does not himself clarify what kind of modern work he has in view, and it is difficult to guess it on the basis of a passing remark. It seems, however, possible that he does not mean the kind of images we discuss in this chapter, for he describes them to be small.

[2] Andrews incidentally draws attention to the similarity of craftsmanship between the sepulchral figures of the 7th century A.D. discovered by Stein in the Chinese graves of Astāna in Central Asia and the "modern, Lucknow clay figures" (see D.C.A., p. 14). This is a specific reference to the modern practice in Uttara Pradeśa, but here too it is not clear what kind of Lucknow images he has in view, and why does he refer specifically to Astāna sepulchral figures for comparison, while on the whole they are executed with the same technique as the rest in the entire Tarimia (East Turkistan), although there may be some difference in this or that aspect as for instance, colouring.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

record a universal practice, but not the provincial one, though they themselves originate in the South.

There are several Hindu festivals falling, according to the lunar reckoning, on different days of the year, mainly between the months, *Āśvayuja* and *Māgha* (hence there cannot be strict correspondence with the Western calendar, but roughly between October and February). To name only the important ones: *Kālīpūjā*, *Sarasvatīpūjā* and *Durgāpūjā*. While the last part of these compounds, viz. *pūjā* being an equivalent to worship, the first parts are the proper names of different goddesses, hence, according to the present usage in Bengali, these imply the days on which the worship of the given goddess is done. The *Sarasvatīpūjā* (i.e. the worship of the goddess of learning) comes in the month of *Māgha*, which in some other parts of India is observed at a different time or in a different way. The *Kālīpūjā* falls on the *amāvāsyā*, the new Moon Day, coming after the full Moon Day in the month of *Āśvayuja*, which in several other provinces is known as *Dīpāvalī* or *Divālī*, but when mostly Lakṣmī is worshipped instead of Kālī. The *Durgāpūjā* is observed, in Bengal, in the last three days of what is elsewhere known as *Navarātra* (the festival or the duration of the nine nights, i.e. days) or *Devī* (=goddess)-*Navarātra*, beginning from the *pratipat*, the second Moon Day in the month of *Āśvayuja*. This festival comes to an end on the tenth day, so also the *Durgāpūjā*, which day is called *Vijayadaśamī* (only *Bijayā* according to the popular usage in Bengal) or *Dasarā* or *Daśharā* in certain provinces. The *Durgāpūjā* alone continues for three days while the rest are confined only to one day. On these and some other similar occasions the images of gods and goddesses, as the case may be, are modelled with unbaked clay technique afresh every year, for, according to the religious prescriptions, these images could not be retained after the worship for a given period is over, and hence all the images are immersed (*bisarjana*) in waters of nearby river or tank depending on the local circumstances, however beautiful these images may be, and how great the time, labours and resources spent on creating them may be. Thus these two factors perhaps explain the survival of this art or technique. First, this clay modelling serves mainly, if not solely, the religious purposes; this is the case at present at least, though it is not yet known what has been the situation earlier. Secondly, the religious injunction to immerse the images in water after the worship is over, has a bearing on the economic field, though the present writer is unaware of other significance of it. This is the very reason for which every year thousands of new images are required, otherwise each image or a group of images, as the case may be, could have been used for a few decades at least. Then the artists could not have got sufficient commissions to earn at least a part of their livelihood required in a year, and this might have caused the discontinuation of the art.

In every respect the *Durgāpūjā* is the most important festival in the Hindu life of Bengal, not only in relation to the occasions in which the clay images are employed but also to all the festivals coming round the year. This is true also of what we are interested in at the moment, viz. technique, because the design in this case is more elaborate than that of others.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

Hence the pictures related to this design are reproduced here to illustrate different stages of the work, excepting two, Figs. 40 and 41, which are of Kālī image. To whichever image or group of images the illustrations may be related, the technique is the same in all cases, except some minor devices adopted depending on the given design, as such they are nothing but simple adjustments. Certain centres, such as Kṛṣṇanagar town or a locality in Calcutta known as Kumārṭuli, etc. are specially renowned in this province for the clay modelling, yet this art is not confined to these or any particular place only. Corresponding to the importance this festival has in the Hindu life of this province, the Durgā group of images is modelled in greater number — from one to a dozen or more — in every village than anything else. If this group of images alone is counted, it comes to thousands in every year and, it happens throughout Bengal. The conditions — material or otherwise — are naturally somewhat different in each tract or region of this province. It may, therefore, be possible that some variations are actually there. Unless studied only by the persons having insight into the technique, it would not be possible to decide which is significant, and thus should be taken into account, and which is not. This comes to mean surveying the whole field, which is not possible for us, and we do not even consider it possible for any one individual. Moreover, such a survey is outside the scope of this book. Without claiming to have done any comprehensive survey, we wish to clarify that the account given in the following pages is based on our own study in the places around Śāntiniketan. The photographs reproduced here were taken by us in the village, Bhubandāṅgā, in 1956, unless the year is not given in the captions. Exception to this are Figs. 36, 37 and the frontispiece which are from another village, called Surul. We are aware of the fact in a general way that varieties of clay are prepared differently, and they have also their own names which may go as technical terms. Similarly, some artists probably follow a certain system or systems of measurements, though not in a meticulous way, the system or systems which are adopted also perhaps by the *paṭuās*, the traditionally professional painters. Probably one who was born and brought up in the province could have easily collected these details, which we were unable to do. It is not that these details are followed by each of the persons practising this art nowadays, but it is true with all those who adhere to the tradition. This art is fast changing, if not also being vulgarized. Hence it is highly desirable that the valuable information is collected soon. Notwithstanding these limitations what is given here is comprehensive, not in the sense that it is an exhaustive account, but in the sense that all the aspects of it are discussed in some detail, that too systematically, the system which the subject of technique requires. If our information is not incorrect, it is perhaps the first of its kind. By this it is not stated that nothing has been written about the *Durgāpūjā* as such. On the contrary, a considerable amount of writings is published every year, but all this is related to the religious or social aspects of it. Also it is not stated by this that no passing references have been made to the technique. With these general remarks we now turn to the subject proper.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

THE PRESENT PRACTICE OF UNBAKED CLAY MODELLING

TECHNICAL DETAILS OF THE MODERN PRACTICE

Since we have proposed to discuss the modern practice of clay modelling on the basis of the Durgā panel, it would be helpful to explain the images present in it. The goddess Durgā has several aspects, in which she has been represented in sculptures of various parts of India as a whole in different centuries. She killed an *asura*, demon called Mahiṣa, i.e. the demon having the character or form of a buffalo, who gave trouble to all. Hence in this aspect she came to be known as Mahiṣāsuramardinī, as the name itself indicates, i.e. she who crushed or destroyed the said demon. Several explanations and variations of this goddess are to be found, but it suffices to note here the form in which she is worshipped in Bengal. She is conceived to have ten arms carrying various weapons and emblems, and she rides on a lion, which form is also commonly adopted, in fact, in many provinces. Mahiṣāsura is generally represented in the human form, with brutal features and at the same time and in addition to the human form either a cut out buffalo's head alone is executed on the ground of the scene, i.e. altar, as in our frontispiece (near the lion's paw of the back leg in forward position) or the buffalo is modelled in full but with the severed head, as in Fig. 60 (behind the legs of the human form of the demon). These are essential in the panel. Durgā stands at the centre of the design on a higher level. This position indicates her imposing form and the importance in the scene. Left to her stands Mahiṣāsura in a dramatically fighting gesture, at a lower level and near her left foot, with which he is trodden or supposed to be suppressed. The lion remains, in the composition, as a counter part to the demon. In whatever posture and position the lion is represented, he is made to attack the demon in his own turn. These three figures, thus, occupy the central vertical zone of the composition in keeping with their importance in the situation. At a higher level, but at a point lower than Durgā, the goddesses Lakṣmī and Sarasvatī are made either to stand or to sit to her right and left respectively. These two goddesses are the consorts of Viṣṇu and Brahman (Pron. Bramhan) while Durgā is ultimately a particular aspect of Pārvatī, Śiva's consort. Thus these three female figures represent, in a way, the trinity of Hindu goddesses. The two male members on a lower level, to the right and left side of Durgā, are Gaṇeśa and Kārtikeya respectively, who, in the same order, are the younger and the elder sons of Śiva. These are the figures, included in the Durgā panel, though sometimes more deities are added.

BACK-FRAME

To support this panel of figures a frame is necessary. In other words, against a frame the figures are modelled. Hence hereafter we call it back-frame for the sake of clarity, as it remains at the back of the images supporting them. It is formed by a number of vertical and horizontal elements. These elements can be either of timber or of bamboo or of both combined. Our Fig. 36 (37 being its side view) is an example of the one made of purely wood. Formerly this is the kind which has been in use as a general rule. Our illustration 38

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

is the example of the one made of wood and bamboo combined. Though this too, as far as the back-frame is concerned, is of wood, the bamboo slits are employed on the area to be considered as basement. Nowadays (although we have not included this example in illustrations) it can also be seen that the entire complex, i.e. the back-frame as well as the basement on which it stands, is made entirely of bamboo, not with single sticks, but with several pieces tied together as the occasion demands. Whatever material it may be made of, the principles with which this frame is prepared, are the same, and this change of material employed for it, is explicable by the financial resources rather than by any other considerations.[3] It is better to explain its form and principles of construction on the basis of its

[3] Until a few decades back the Jamidārs (or Jamīndārs), land lords have given the commissions to the traditional and perhaps also hereditary artists to model the Durgā panels in the halls or pavillions constructed separately for this purpose and on permanent basis with lasting materials as burnt brick and stucco within the premises of or close to their residences. Accordingly, they also spent money on these back-frames, by getting them made in good wood for the permanent use. Although this system of land ownership was abolished by legislation some years back, many of those families, having sufficient means, still maintain this tradition. Or in the most cases the permanent land endowments were made long back, and so, the income coming yearly from such lands is spent for the purpose. Thus this type of practice is still continuing. A few big merchants or other wealthy people also have maintained this tradition as a sign of social prestige. In both these cases this is a private matter, yet the entire community of the village or town used to and do take part in the worship. Incidentally it may be mentioned that our Fig. 36 (37 being its side view) and the frontispiece represent this tradition. The village called Surul (near Bolpur or Śāntiniketan) was entirely in the possession of a family which was later on divided between two brothers some generations ago. The lines of elder and younger brothers came to be known as *baḍo-bāḍī* and *choṭo-bāḍī* respectively, meaning literally the big house and the small house. With this partition arose two different Durgā panels, and these two panels are still maintained under the same names, as above, although each line has since then further subdivided into quite a number of families. Our frontispiece belongs to the *baḍo-bāḍī* while the Fig. 36 (or 37 too) is from the *choṭo-bāḍī*. Both the lines have commissioned till 1967, a family of traditional artists residing in another village away from Surul itself, although on difference of opinion, the members of *baḍo-bāḍī* have changed the artist in 1968, but the images were executed on the previous models to retain the general trend, and this is the 1968 panel which we have photographed and used as the frontispiece. Although executed on the previous models, some change was inevitable on account of a different hand, but the change was not for bad, if not perhaps for a nominal improvement. Apart from these side questions, it is worth of noting from the standpoint of art history that the artists who have done the work in these houses for long are called *sūtradhāras* by their caste, and we shall discuss the related issues in the next pages. Further, it may also be mentioned that although the same artists have executed the images in the said two houses, they used to differentiate the figures on wishes of the families.

Coming to the point again, we should note the new tendency which has gradually developed in recent times. The residents of each ward or street of a town or of a village began to allot a piece of land for the purpose, and to construct in it a mud house with roof covered with straw. Yearly expenses are met with from the subscriptions raised. Thus these places are not private, but public, and implying this community effort, such worships came to be named in Bengali as *sārbajanīnapūjā*. Most of the reproductions here illustrate this kind. Particularly see Fig. 38, in which the back-frame is simpler than the one discussed above, though the essential part of it is made of wood. There is also a third stage of development. In general this is also the same as discussed just above, but the difference is that the images are erected at street corners or similar places under a tent. The ways of raising subscriptions for this type of arrangement are even becoming often a menace to the society, particularly in big cities, for unruly elements exploit the occasion. The back-frame is constructed only with bamboo in this type of arrangement, as there is no permanent place to preserve a wooden frame. All these points show that the change of material used for the back-frame is determined purely by the resources. The last two kinds of conducting the worship, especially the third stage, is the source of the fast decline of the standards, for the managing bodies being often not properly educated in the issues concerned, dictate the artists to form the goddesses on the models of cinema stars and the kind.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

wooden version, as the frame made of timber is not only more traditional and historical but also, as shall be pointed out, has some bearing on the other questions.

As a first requirement a board measuring a metre or more in width is made out of wooden planks laid down close to each other on a number of wooden beams running in the course of the width of the board or into the depth from the spectator. (Throughout this section see the Figs. 36 and 37 or even 38, whenever necessary, for they are not going to be referred to each time.) The major part of this board at the front serves as an altar, when the worship takes place. This board is raised usually from the ground level by way of placing it on a platform. Towards the rear of this board the back-frame is constructed out of a number of quadrilateral, vertical, wooden elements of varying sizes, all posted in it and arranged in two rows, of which the one stands at the front of the other at a distance of about forty to fifty centimeters. Usually the minimum number of the vertical elements, i.e. the posts required in each row, is five and it can be increased up to seven or more, depending on the total size of the panel planned and the number of images to be included in it and, on the similar considerations. The central post is the longest and the next longest are those two lying on the both sides of it. Likewise, each successive pair goes on becoming shorter than the pair standing immediately inside it. Thus the ends of these posts appear as if they were meant to be the frame of a pediment, although all these are ultimately covered by an arch motive attachable as the necessity arises, which is intended to be an aureole (this arch motive made of wood is seen in Fig. 36, being detached and kept against the wall, behind the lower portion of the back-frame and resting on the ground). The distance at which the respective posts lie in the same row depends upon how the total design is conceived. A general, but not the strict, rule in this matter is that one post possibly remains at the back of each figure, or at least very close to it; this is for the obvious reason that it carries in a better way the weight of the figure standing close to it. Accordingly, the central post is seen behind Durgā. Likewise, the posts on each side of it, support Lakṣmī and Sarasvatī. If one sees two posts in our Fig. 36 near these two images, they are intended to provide not only independent zones to these goddesses, but also an independent arch, as in the case of Durgā. At the outer posts remain Gaṇeśa and Kārtikeya. In these cases too the independent zones are resulted in, and they also have an arch at the top. If these arches lie quite high above the heads of these gods, that is for two reasons, firstly, because these images are seated and, secondly, these arches should accord and form a line along with the rest which are at some height. All these arches fall on the lines forming the two arms of a triangle. If the zones lying at the outer edges of this frame are bigger, that is again for the consideration of the design in which the images are arranged. At the same time they also represent a break, otherwise a monotony could have resulted in. Mahiṣāsura and the lion remain on the support of at least three central posts. In the composition of the figures the head of Durgā occupies the highest point, then the heads of Lakṣmī and Sarasvatī fall on one line

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

to form the next row and the last row is formed with the positions of the heads of not only of Gaṇeśa and Kārtikeya, but also those of the lion and Mahiṣāsura, though with a slight difference of the level. True, the graded shortening of the posts does not follow the rows of the heads of figures in the same degree in measurement, but the correspondence is obviously suggested. The figural composition against this frame forms two concentric triangles, with the head of Durgā as one common vertex: the right arm of the inner triangle runs over Durgā's shoulder, leg and ultimately the hind of the animal, and the other, i.e. the left arm runs over Durgā's shoulder, shank and the demon's left arm. Similarly, both the arms of the outer triangle run over the shoulders of all the deities and to the ground through the legs of Gaṇeśa and Kārtikeya. Who knows, if the triangular *maṇḍala* connected with the *Devī* (goddess in general) has not played a rôle behind this composition. Coming back again to the construction of the back-frame, it should be noted that all the posts of the back row, stand exactly on the corresponding positions to the front ones in right angles. The vertical posts standing in each row are linked by a number of rafters on their back side running all along the horizontal course. Except in the case of the top one, the positions of these horizontal rafters are generally determined by the points where the "minor supports" (or the dowels according to usual usage) holding the cores of the images, lie. Thus at the back of both the rows the rafters run on the same level, because the "minor supports" running in the depth of the back-frame rest on them, which should be on one level. Again, each corresponding pair of the posts in both the rows is interlinked by thin quadrilateral pieces of wood running across the depth of the two rows in a number of places, see Fig. 37, in which these pieces are distinguishable from the "minor supports" by their size; these pieces do not extend from the limits of the posts while the "minor supports" do, especially at the front, for they are meant to hold the cores of images. Thus the vertical posts are interlinked with and are held by the horizontal rafters on the one hand and by the square pieces on the other, so that the weight is distributed to every one of the posts, even when there is a concentration of the weight at places depending on the size and grouping of the images. Moreover, this frame being rectangular in general shape and also two-legged is stable too. In addition to all this, the back row of the posts are further strengthened at the rear by the two long rafters running diagonally and including the entire complex. Although not so important, two more posts are also brought — one on each side — between the two rows and against those pieces linking the pairs of posts. In themselves they are held secure by a piece of wood attached across the depth towards the upper part of the frame. Thus every part of this frame has a meaning and is carefully thought out. It involves a considerable degree of engineering skill. All this is possible, because there is a tradition behind it, the tradition which is nothing but the accumulated experience, though the victims of the fashions understand it today to be the quite opposite. Apart from its functional aspect, it can go as a piece of art by itself, and that too more legitimately than many pieces of "modern art" by the "tumtummed" masters. Admittedly, the back-frames to be found in all places of this

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

Durgā panel may not be of the same standard, but all the major principles are involved also in those cases, which can be realized after a little thought. It is also not necessary that all the back-frames should be constructed on the similar model. The construction varies in detail, depending on how one has planned the panel. Two things are absolutely necessary for it. The frame must be well built and the horizontal rafters should be planned at the points where the "minor supports" are to be brought. Otherwise one has to provide additional elements for the same, which does not lead to a clean work. The compositional values of the images may differ, for example Fig. 42, in which the space below the lion is rather empty looking, though the individual images, judged sculpturally, are in no way inferior to those of Surul ones. All these are again different questions. At the end it may be mentioned that apart from the fact that this frame serves to hold the weight of the images, it has another function. At the end of the worship the whole complex of the composition is lifted and taken in a procession before the images are submerged in water according to the religious prescription as explained already. In course of all this it receives naturally many jerks, which it must withstand. For this reason also the back-frame must be stable and the stability comes when the construction is based on principles. So much for the back-frame.

MINOR SUPPORTS

What are usually called dowels, which we have proposed in the preceding chapter to name "minor supports" are tied at first across the depth of the back-frame making them rest on the horizontal rafters to hold the cores of given images firm in position. Two such "minor supports" are employed in each figure — one between the shoulder blades and the other somewhere in the sacral region. This is a general rule, but one may be reduced, if the figure is small, or the number may be increased, depending on the posture and other situation, for example if the knee of a leg, especially in the Durgā image, has a sharp angle or bend, then an additional piece may be brought from some appropriate point to secure it. These are after all meant for holding the core in position, and so, one has to manage according to the given situation. The usual practice of employing two "minor supports" has a meaning. Since neither the *vaṃśadaṇḍa* nor the *jaṅghāśūlas* (unlike in the practice we have discussed on the basis of ancient texts) are posted anywhere, a single "minor support" would not do. In that case the core being suspended on it, the figure may move to either of the sides during the modelling or in other times when for any reason the given image or the back-frame receives some shaking. If the trunk is made secure by using two "minor supports" at the said points the rest normally remains in position, for it is the trunk from which the limbs branch out. This is the meaning of using two "minor supports" which are invariably needed. Attention may be drawn to the fact that one of our source books, as has been elaborated, instructs to use two *upaśūlas* as against some of the other texts which prescribe only one *śūla*. This is the practice in which either the *vaṃśadaṇḍa* or the *jaṅghāśūlas* are invariably posted in the ground.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

In spite of that, if a text prescribes to employ two *upaśilas*, it goes without saying that the two "minor supports" are a minimum requirement in this case where no part is posted in the ground. As has been said, there is no taboo to use more, and as a matter of fact several of them in the form of bamboo slits, much thinner than the rest of the important "minor supports", and thus looking like long pins, are employed in Surul Durgā figure. All these are tied not necessarily across the horizontal rafters but in other appropriate points, to secure several of ten different arms raised upwards or spread to the sides. Now our Fig. 37 may be referred to. One can observe in it in Kārtikeya's figure in a better way, which remains in the fore-front in this illustration, that the two "minor supports" are brought across (Cf. Fig. 36) the long horizontal rafters lying in the lower region of the back-frame. Likewise, two of them are employed on the upper pair of long horizontal rafters in the core of Durgā, though they are not so distinctly seen as in Kārtikeya. In the core of Sarasvatī, as far as visible, only one "minor support" is employed between the shoulder blades bringing them on the lower of the upper pair of long horizontal rafters. Perhaps the second one has been fastened to the lower member of the lower pair of long horizontal rafters to tie the heel of the standing leg (*Standbein*, but not *Spielbein*). The same applies in the case of Lakṣmī image, though not visible in the said illustration. Thin pin-like elements supporting Durgā's additional arms are already referred to. One more and very prominent "minor support" is seen holding the body of Kārtikeya s vehicle viz. of the peacock. Though it is heavy in form, this is tied on the shorter rafters which are specially brought for this purpose, and hence nailed only to outer pair of the front and back posts, which can be seen also in Fig. 36. This discussion shows how the "minor supports" are employed and managed according to the given circumstances. Further, it may now be noted that the pair of the long horizontal rafters brought at the lower region of the back-frame are so planned that they provide the base for the two "minor supports" employed in all the four figures placed in lower row, namely Kārtikeya, Mahiṣāsura, the lion and Gaṇeśa. Similarly, the other pair in the upper region serves as the base for the two "minor supports" of Durgā image, while the lower one of that pair does the same in the case of the images of Lakṣmī and Sarasvatī, carrying only one "minor support". This means that the region of the shoulder blades of the said two images come on the level of the sacral area of the Durgā image. This is possible, because the sizes of the figures are conceived in terms of the importance played in that situation (*Handlung*), and this explains the bigger size of the demon than the rest of the deities, though he is a demon and others are godheads. This shows how every detail of the back-frame is very clearly thought out before it is constructed. In this well-conceived frame the long horizontal rafters carry the important "minor supports" while the rest remain at different places according to the need. The same scheme may not exactly be followed by all and in all places and in every example. Once the basic factors guiding the work are realized in this way, it would be easy to recognize them elsewhere too, even if there are differences in the scheme.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

STRAW CORE

With the help of the "minor supports" the cores of the bodies of the images are fashioned by using the rice-straw, i.e. the necessary amount of straw is attached to the "minor supports" and, the cores are prepared by binding the straw bulks with a thread of the necessary diameter (see Figs. 38 and 41 or even 36, 37 and 39). The compactness of the core is entirely dependent on how the thread is tightened while winding it. (The cut pieces of this thread can be seen hung in a bulk over the right shoulder of the Durgā image in Fig. 38, so that each thread can be readily drawn whenever the previous one is completely wound.) Thus the work of fashioning the core begins with the trunk area. When the core of the trunk is over, the lower part of this bulk is divided into two parts; and some necessary amount of straw is added to each of the two divided parts, so as to create the bulk or the core of the legs. Before tying the bulk of the straw at the upper part of the trunk some amount of the same material in the form of rather a small bundle is placed on the top, and the further amount of it is spread over that bundle arranging the former like a sheet, and then the chest area is finished. This can be clearly seen in Figs. 36 and better in 38, for the straw here runs like a sheet in vertical course, and at the same time flows over the shoulder regions to reach the back. This small bundle, placed across the bulk forming the chest, helps by providing the necessary basic bulk to which further amounts of straw can be added to form the cores of the arms as in the case of legs, this can be distinctly seen in Gaṇeśa's left shoulder region in Fig. 38, as it is yet in an unbound state. Or, alternatively, the cores of the arms are prepared in a similar way as those of the legs, namely by dividing the ends of straw lying at the upper part of the trunk, into two parts and then binding them into the necessary shape, as may be seen in the core of the lying image (viz. of Śiva) on the ground in our Fig. 41. No core is prepared for the head according to the usual practice, but at times it is also done as an exception, to which point we turn later on. It should be particularly noted that in this practice too the cores of limbs and trunk are not formed separately at first and then joined together. On the contrary, all parts are shaped and tied as one unit, in a similar way as the ropes prescribed in the ancient texts. The exception to this rule may be the additional arms, if a given deity has more than two. In these cases the cores are bound separately and joined to the rear of the trunk in the region of the shoulder blades by pushing the ends of straw, kept loose towards the roots of the arms, into the bulk of the trunk or by spreading them over it, as may be noticed if the standing core (of Kālī) in Fig. 41 (which is a back view) is closely observed. When the core of the body with all its parts, is shaped, the additional portions of the bulks, as are seen in Figs. 38 and 41, are cut out (see Fig. 36). In this way the core of the entire body is made of straw, except of the neck, palms and the head. In shaping this bulk, one should take care that from place to place its shape corresponds to that of the different parts of the body in its finished state. Accordingly, straw is added in one place and taken away in another. The

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

straw core prepared in this way already suggests the form of a human body; observe the chests, upper arms, thighs and even the lower part of the abdomens in different cores in Fig. 36. For that matter, even certain difficult details are, to some extent, brought out in this work, see for instance the core of the standing image (of Kālī) in Fig. 41 (back view of the image); in this case, apart from forming the fine details of the left thigh and even of the calf, the angle or the bend of the right knee is brought out, when there is only a curve at this point in the armature (cf. Fig. 40, which is the front view, hence the concerning leg should be seen in altered positions).

Often nothing but straw is used to create the bulks of this or similar types of images, but sometimes thin bamboo sticks are employed inside certain areas of the straw core only when the use of additional material is felt unavoidable. If we now turn to the image of the goddess Kālī or its type, it should first of all be mentioned that it is free standing, i.e. it has no back-frame to support or hold it. Hence the bamboo sticks are posted in the pedestal or base, which extend up to the chest, as seen in our Fig. 40 (which is photographed from the front view). The two sticks on both sides of the triangular shape seen in it serve as the armature of the legs. The stick that carries the weight really or to a great extent, is the one standing in the centre of the triangular shape, which has no connection with the body, although the upper part of it may serve as the base of the trunk, which is rather accidental. Hence it is extraneous, like the *upaśūla* or the "minor support", yet performing very important task of holding the image, without which the two sticks of the legs cannot safely carry the weight. Thus it is merely a technical device standing slantingly, and it is ultimately covered by the decorative or other motives in final finishing; moreover, this lies at the back side of the image. On this partial armature (it is partial, for there are no similar sticks in the arms or the head) the necessary bulks of straw are added and tied tightly, as usual, with a thread winding around them at some intervals, as may be seen in Fig. 41, which is its back view. At the same time neither bamboo sticks nor other materials are employed in the core of the second image (of Śiva) lying on the ground in the same illustration, for it rests on the pedestal, and hence needs no hard material inside it for the support. From this explanation of the methods of preparing the core of the Durgā image and its kind on the one hand and of the Kālī image and its type on the other, it is clear that the use of bamboo sticks within the core depends on the design only. In the case of the former there is a wooden frame at the back which holds it firmly, so that the use of bamboo sticks within the straw core is not so necessary, whereas the employment of some hard material as bamboo sticks is an absolute necessity in the case of the latter, which is made without the back-frame, lest the image crumbles, for straw alone cannot resist the weight of clay.

In note 3 of chapter X we have already mentioned that (i) a basic structure of anything, (ii) the bamboo sticks used inside the straw core, and (iii) the wooden back-frame are all called *kāṭhāmo* or *kāṭhām* in the present use of the word in Bengali, and we have arrived at the

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

conclusion that the first and third usages are not original; they are rather of secondary nature extended from the second one (which is the original) in a later period. While this is true, it is sometimes explained[4] that the *kāṭhāmo* or armature is made of both — the bamboo slits and straw. But it does not seem precise, in view of another word *mer*, prevalent among the men who model these images. The bulk formed by the straw is called *mer*, which is mentioned as synonymous with *ṭhāṭ*. Although the word, *ṭhāṭ* is generally explained in the dictionaries as "frame", either *mer* or *ṭhāṭ* in this context seems to mean bulk. This would seem correct in view of the fact that straw is used in the place of the ropes in ancient practice, but not in the place of the *śūlapañjara*. The word *kāṭhāmo* should, therefore, refer only to the bamboo sticks inside the straw, if used, and *mer* or *ṭhāṭ* to the bulk obtained from the straw.

SYSTEM OF MEASUREMENTS

According to its nature this topic should precede the previous one. However, neither we got this account fully nor there is any surety whether what we got is reliable, to discuss it earlier authentically, and hence we mention the bit of information we had, rather as an appendix to the above topic, so that the scholars may try to investigate it further. The measurements of each part or area of the body are not meticulously maintained, but the major proportions of the different limbs, especially of the Durgā image, are obtained in the following way. The lower end of the abdomen, i.e. the beginning of the genital organ, is considered to be the central point in the total height. The head along with the neck, occupies one fourth of the upper half. The distance from the knee to the lower end of the heel is slightly more than half of the lower half of the body, which means that the shank, together with the heel, is a little longer than the thigh. The lower end of the upper arm falls on the loin while the lower arm, without the hand, is somewhat shorter than the upper arm.[5]

THE WORK IN VARIETIES OF CLAY

When the work with straw is completed, i.e. the *mer* is ready, one can proceed to the application of clay over the core. In modern practice too, as in the ancient one, three varieties of clay are used, but in a different way. For the reasons said below, it is convenient to discuss the ways of fashioning the heads at first, so that the process of employing the varieties of clay can be explained uninterruptedly. The heads are formed in three ways, viz. (i) modelling them on the trunk of the image, along with the rest of the body, (ii) to make them sepa-

[4] D.H.I., p. 210, note 2.

[5] This information regarding the proportions was given to us by the artist, Śyāmāpada Hajrā, who has done the Durgā panel in Bhubaṇḍāṅgā reproduced here, and who is also seen in our Figs. 38 and 43. With the exception of those of the head and neck together, these measurements correspond roughly to the *navatāla* system, but on seeing this type of images, one gets a different impression, so the matter needs investigation. We are thankful to him for giving the information on this and a number of other aspects.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

rately by hand throughout and, (iii) to take the casts from the mould. These are explained in the same order.

MODELLING OF THE HEAD ALONG WITH THE REST OF THE BODY

Except in the case of Gaṇeśa it is very rare in the present day practice of clay modelling in Bengal to fashion the head on the spot, i.e. on the trunk, along with the rest of the body. In other words, they are often, if not almost always, made separately either by hand or by taking recourse to the mould. It seems, or as a matter of fact, it is obvious that Gaṇeśa's head being that of an elephant, it is not easy to manage with it, on account of its trunk and other features, without using some core within it, which excludes the possibility of making it separately, either by hand or by casting. In contrast to the other cores, at the neck portion of the core of Gaṇeśa, in our Fig. 38, some loose ends of straw are left erect, with the purpose of adding further amount of straw to them and of shaping the core proper to the elephant's head; the same can be seen completed in Fig. 42 (although a single coat of clay is already applied to it. The support below the trunk is temporary, which will be removed as soon as different coats of clay are given). Even if such additional straw or the core itself is not seen in our Fig. 36, that is only artist's preference to do it in a different way. Such a core can be made over the dowel which will be pushed into the trunk, as is instantly explained. Śyāmāpada Hajrā, who works in the village, Bhubaṇḍāṅgā, normally shapes Mahiṣāsura also, as he does in the case of other images, with the head made separately, hence the core of this demon in our Fig. 38 (photographed in 1956) is seen in the same form as that of remaining cores. But he felt in 1967 to model the head on the trunk with the rest of the body, and pushed a bamboo dowel into the trunk, and formed a core of the head on the upper part of it by tying the necessary amount of straw, as is seen in our Fig. 39. Further details of it need not be touched here, as the preparation and the application of clay, etc. are the same as they are adopted in the case of the rest of the body, which shall be discussed in the proper context.

METHOD OF MODELLING THE HEADS SEPARATELY BY HAND

For this kind of work a fine variety of clay is prepared by adding sufficient water to it and kneading it very well, but without mixing rice husks or any other material. To begin the work, the clay should not be too hard nor too thin. On a wooden board a mass of clay of almost pyramidal form is placed, Fig. 43. The lower part of this mass is formed into the top of the head, and the upper part into the jaw region. The details of the head, except the ears, are gradually brought out in this mass, and then it is hollowed from the place of neck joint, as in Figs. 43 and 44. When it hardens, but not yet dried, it is cut and separated from the wooden board. All the features are sharpened with an instrument, while the head being held in the left hand. Only two simple tools are used in the entire process of making

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

it. Of them the one is made of a bamboo slit and is sharp-edged. It is used to cut out small amounts of clay and to form the lines and sharp features. The other is made of wood and is leaf-shaped at the head. It is used to press and to polish (see both these tools in Fig. 43 in front of the lump of clay and only the wooden tools in Fig. 44). The ash is filtered through a cloth in order to remove hard particles, which may eventually cause scratches while effecting the polish. This filtered ash is packed into a fine piece of cloth (this packet is seen in Fig. 44, under the handles of the two wooden tools) and, whenever necessary, the clay head is gently struck with this packet, so that only a little amount of ash falls evenly over its surface. The use of ash helps in two ways: firstly, it prevents the polishing tool from sticking to the clay surface and, secondly, it gives polish, Cf. the head in Fig. 44 with those in Fig. 43, especially with the one held by the artist in the hand. The point that has a bearing on the technical level in this process of making heads is the way of hollowing it. The hollowing in fact is effected considerably, preserving only a thin wall of over a centimeter width all around and thus reducing the weight greatly. Moreover, this work is started from the neck portion, which helps a particular way of joining it to the body, which shall be discussed later. The only unsatisfactory aspect in this way of making the head, is that the ears are not shaped along with it, but they are done after the head is fixed to the body. In fact this aspect appears unsatisfactory, for the very reason that it is modelled by hand throughout. On account of the fact that the ears are shaped separately and at a later time, this part of the work often tends to be of indifferent kind. It is not really a satisfactory aspect, although the explanation may be given that these images are meant for a few days of use, and the ears in most cases remain covered with other ornamental load.

METHOD OF CASTING THE HEADS

Some scholars are too quick to interpret the use of mould either as a sign of inability of the artist to create new things or of a decadence. Le Coq, for instance, built a theory on the basis of some moulds discovered in Shorchuk and other places that Central Asian artists got the moulds from the "Gandhāra" generations earlier, and whenever the need arose they pressed a bit of clay into them and, they went on getting the heads in this way for centuries. There are others also who believed more or less the same, though not expounded the theories clearly. As touched in the previous chapter, Marshall and Foucher have underrated the Central Asian creations comparing the respective uses of the mould (for stuccos) in "Gandhāra" (in old sense) and Tarimia (East Turkistan). A similar practice, still alive in Bengal, offers correcting solutions to such interpretations. In view of this and in the interests of the description of the real situation, as is known to us, a few points may be said at first. Although the moulds are employed in this practice, that too quite often, the artists do not generally use the same mould for years; then the question of using a single mould for generations does not arise at all. If some images appear to be the examples of a craft rather than of an art, that is

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

for different reasons, but not owing to the use of mould. Every modeller prepares the mould by himself and for himself, by modelling the necessary originals, i.e. the heads or other objects as ornaments, etc. The mould is prepared either in stucco (Fig. 51) or in clay itself (Fig. 47). Even if they are made of clay, they are not baked (and we do not know, if rarely they are burnt, i.e. made terracottas). The modeller in the village, Bhubaṇḍāṅgā, who had done all the heads throughout by hand in 1956, as the most of our illustrations (particularly Figs. 43, 44, 54, 57, 59 and 60) indicate, has taken recourse to the mould by preparing them by himself in stucco and in unbaked clay, (our Figs. 51 and 47 respectively) either in 1964 or in 1965, yet he has not used them in 1967 and 1968, when we have observed him working on the Durgā panel. He has preserved them still, but it could not be said or for that matter he himself may not know, whether he would use them any time at all, or if he would, when he would do so. This shows that the modellers are not slaves to the mechanical devices, though they may adopt them, when the need arises.

As far as the actual work of taking casts out of the moulds is concerned, there is nothing new in it. Before taking the cast, very fine ash is sprinkled in the cavity of the mould, so that the clay would not stick to it even in small patches and this also enables the easy detachment of the cast from the mould. A fine and well-kneaded clay, but not mixed with any material, is pressed onto all the sides of the cavity of the mould, carefully seeing to it that the clay would be properly pressed and its thickness would be a little more than a centimetre and would not vary from place to place, or in case there is a variation, that would be gradual, but not irregular. Accordingly, the condition of the clay must be like a pulp, i.e. it should not contain too much moisture and hence neither too thin nor too hard. (Unfortunately our illustrations of casts, except the Fig. 50, which is by a different person, are made with very ordinary and badly prepared clay, in an indifferent manner, with greater thickness than the usual measurements, as the modeller has not cared for the out of season work. Hence the reader should look at these few illustrations only for the manner, but not for the quality, of the work.) The mould in this practice quite often comprises only the front part of the head, namely the mask, although a part of hair above the forehead is included, but nothing else, as in our Fig. 48 which is a cast from the mould seen in Fig. 47. There would, therefore, be a cavity at the rear of the cast, similar to that of the mould, see Fig. 49 (in this case the quality is too bad, and the walls have greater thickness than they normally should, but see our Fig. 50 for the usual thickness of the walls and a good work according to the normal standard). The cast is kept on an even place after it has been removed from the mould and allowed to dry in the air, but in shade only. When it is hardened and still has some little amount of moisture in it, the features are sharpened, if there are any slight damages on the surface, they are retouched and finally pressed and polished with the same tool seen in Fig. 44. At this time a somewhat thick sheet of clay is made by pressing a mass of clay on a board or else on any even place, which is attached to the rear edges of the cast to cover the latter's cavity. At the same

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

time it is so contrived that a hole results in near the area of the neck joint. Thus a hole at the bottom and a wide opening at the top are the features of such casts, as seen in Fig. 50 or 55. The sheet attached at the rear is a necessity for joining the head to the neck, and the hole at the bottom allows to let the dowel of the neck into the cavity of the head. The opening on the top is sometimes covered with another sheet, or the mould itself is so prepared that a thin, flat sheet is automatically formed in the cast (for this method we have no illustrations). The flat area obtained on the top by either of these two methods, works as some kind of base to the ornamentation, especially when the heavy kind is planned. Otherwise, i.e. in the cases in which the head is provided with only a simple type of ornamentation, as in our Fig. 55, it is all the same whether the top opening is covered or left bare as it is, although as a general rule it is left out. Coming to our second example of the cast head — Figs. 51-53 — it should be noted at first that the ears as well as a considerable part of the skull with the details of its hairdress, are included in it. The view held by Marshall and others that the inclusion of these items in the mould leads to the flatness of the face, is not tenable, if it has to be considered as a general rule. It is proved by this cast (Fig. 52). Whether or not it gets flattened depends upon how cleverly the artist manages it. The only thing one may sometimes say against the inclusion of the ears in the mould, is that the ears in this case do not stand in a natural angle. True, the inclusion of this area in the mould with details has no purpose if it is covered with a load of ornaments, as is common in this practice, but that is a different issue. In case the hairdress is left as it is in this example, it can go as a well-combed hair.[6] If the design of a third eye is found in the cast (Fig. 52) instead of an ornament falling on the forehead from the hair, as is seen in the mould (Fig. 51), that is only because the artist has changed it so, after taking the cast by cutting out the ornament, in order to indicate that this head belongs to Durgā. This also incidentally shows how minor variations could be brought out in the casts, though moulded from a single mould, and how the artists actually undertake such variations. This cast too has a cavity at the rear, which is covered, in the above manner, by a sheet of clay, see Fig. 53; here too the noteworthy thing is the hole at the place of the joint of the neck, but there is no scope for the opening at the top, because a part of the skull is shaped.

Thus the separately made heads — whether modelled by hand throughout or cast from the mould — have an empty area inside, and till the end this empty space is preserved. As a matter of fact, the inner area is hollowed by an effort in the cases which are modelled by hand throughout from a solid mass of clay. This has a technical meaning, viz. the head becomes

[6] If some amount of realistic touch separates this head from the previous one (Fig. 48) and particularly from those made in 1956, it is for no other reason than the change of attitude that came in the artist owing to the type of commissions, other than of religious images, that he got in recent years. It is also partly owing to the demands from the youngsters of the village, who have become the organisers of the festival and have no understanding for anything. Thus this is also one of the good examples showing how art and artists change to bad often helplessly and innocently or even ignorantly.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

lighter, which is advantageous in a practice in which the neck is not too strongly constructed, and besides the fact that these images are used only for a short time, the whole panel of the images is lifted in the procession. True, this hollowed area could be proved unsafe, if the images are meant for permanent use.

THE PREPARATION AND EMPLOYMENT OF THE FIRST CLAY

The earth meant for two or three coatings can be brought from anywhere; the only condition that must be fulfilled here is that it must be sticky. After cleaning is over, by way of removing undesirable substances, if any, it should be wetted and kneaded. At this stage some chaff or rice husks are added to it. When the earth is sufficiently sticky, the amount of husk to be added to it, should generally be one third of it. If the clay is not so sticky, the amount of husk should be a little less than one third. Kneading the clay occasionally, one has to wait until it becomes pliable and soft.

The first clay prepared in this way, is applied to the entire *mer*, i.e. the straw core. The thickness varies according to the place, because the details of the form are brought out in this material. On the whole, however, the coating is not thick, nor too thin (as is clear from our Fig. 42; a more clear idea is gained from the legs of Sarasvatī and Lakṣmī, seated in the middle row on both sides of Durgā). One has to wait till the first coating is completely dry and then repair the cracks appeared in it (see Fig. 42, particularly the lion and demon, in which the cracks are distinctly visible). Then one gives the second coating with the same clay and exactly in the same way, i.e. modelling the peculiarities of the different limbs. Generally two coatings are given in this variety of clay but, if necessary, one more coating may be given. In this clay itself, however, most of the details of the body, except the head and fingers, are brought out.

THE METHOD OF JOINING THE HEAD

If the head too is modelled on the trunk along with the body, which is often the case with Gaṇeśa's figure, but with other images rather rare, then there is nothing special to note here, for the work of entire body follows a given course. But the heads in this practice are made separately, either by hand or by means of casting from a mould. In either case this is the stage, when it should be attached to the body, for the major work in clay is over by now, and if something still remains to be done, that is concerned either with polishing or minor parts as fingers or secondary items as ornaments. As a first step in the process of joining the head, a dowel cut out of bamboo slit, is pushed into the upper plane of the trunk in an appropriate point. In this case one may describe this action as driving a dowel, if so wished, for the reason that straw allows such action, but the same word would be misleading in the case of cores made of other materials, which do not permit driving, for in that

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

case the previous work would be disturbed. Even in the case of straw core the possibility is not unlimited, for there are already clay coats over it, which may eventually fall down, if the jerks are great. As a matter of fact, a bamboo stick is usually kept in place, when the work of tying the chest part of the core is started, and this is removed either after tying that part of core is over or, rarely, just before the real dowels are pushed. This method of work will enable an easy way of pushing the final dowels. This point should be specially noted, for there is no clear idea, among the archaeologists as among art historians, of the real problems involved in using the dowels. Since the pieces of bamboo used while binding the straw have been removed after the work of cores of the trunks is over, one cannot see them any more, as in our Fig. 38. If some dowels are seen in our Fig. 36, they are final dowels employed in the previous year.[7] The size of the dowel prepared by cutting a bamboo slit into the shape — pointed at least at the one end to enable the pushing — is determined by the requirement. The part to be pushed into the trunk must be sufficient to give the strength to the neck to carry the weight of the head. If it extends above the trunk up to the upper point of the neck or a little more, that would do. In any case it should not reach the crown part, if the head to be attached has a cover or the skull area. When there is an opening at the top of the head, it does not matter even if the dowel extends slightly over the skull region (see for instance Fig. 55, in which the blunt or the flat end of bamboo dowel is visible at the centre of the circular opening). The angle of the neck should be taken into consideration, and the dowel should be pushed into the trunk accordingly. Around the dowel,

[7] It should be noted at this place that there are two practices. One is that every year the cores of straw are constructed afresh, and the other practice is that the cores prepared in the previous year or a few years earlier, are used again and again as long as the condition of the straw is good, only undertaking the minor repairs, if necessary, every year. When the images are immersed in the waters of a river or of a tank, etc. which is within the reach, after the rites for a day or for three days, as the case may be, are completed, the clay and other materials are washed away, but the cores are not removed or destroyed then and there, even if they are not planned to be used again. The same procession party which takes the images for immersion, brings back either the base frame or the back-frame, whatever it may be, along with the straw cores, which remain till the next year. This is the case with all sizes and images; that is why one sees hundreds of straw cores with their usual design or frames outside the private houses in verandas or under the roofs, not to speak of the temples or halls specially constructed for the purpose in villages or in towns. A small design of Kālī image seen in the foreground of our Fig. 40, is in fact one of such examples, i.e. the one that was used in the previous year. If somebody wants to form the cores every year, he too destroys the old cores only in the next year when the occasion comes again, and then shapes the new ones on the same frame. In both the cases of our Surul examples — the frontispiece and Fig. 36 (or 37) — the cores are not made afresh every year. The men concerned try to use good material and shape the cores more carefully. Moreover, they preserve them in a good place and also see to it that the clay is washed away fully without any residue remaining on them. Hence they use the cores once built for a number of years. The example reproduced in our Fig. 36 has been already employed for a few years, that is why the dowels seen on some of these cores are final ones employed in the previous year, but not the sticks used at the early stage of preparing the cores. While washing the clay at the time of immersion some have fallen down, others have remained; no attention is paid to them. Whenever the images are modelled again, either these dowels are used or rejected, for in any way some of them must be prepared newly, which is in fact a simple matter of cutting pieces of bamboo slits into shape. This explains why in Fig. 36 the dowels are present only in some cases while they are absent in the others.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

lighter, which is advantageous in a practice in which the neck is not too strongly constructed, and besides the fact that these images are used only for a short time, the whole panel of the images is lifted in the procession. True, this hollowed area could be proved unsafe, if the images are meant for permanent use.

THE PREPARATION AND EMPLOYMENT OF THE FIRST CLAY

The earth meant for two or three coatings can be brought from anywhere; the only condition that must be fulfilled here is that it must be sticky. After cleaning is over, by way of removing undesirable substances, if any, it should be wetted and kneaded. At this stage some chaff or rice husks are added to it. When the earth is sufficiently sticky, the amount of husk to be added to it, should generally be one third of it. If the clay is not so sticky, the amount of husk should be a little less than one third. Kneading the clay occasionally, one has to wait until it becomes pliable and soft.

The first clay prepared in this way, is applied to the entire *mer*, i.e. the straw core. The thickness varies according to the place, because the details of the form are brought out in this material. On the whole, however, the coating is not thick, nor too thin (as is clear from our Fig. 42; a more clear idea is gained from the legs of Sarasvatī and Lakṣmī, seated in the middle row on both sides of Durgā). One has to wait till the first coating is completely dry and then repair the cracks appeared in it (see Fig. 42, particularly the lion and demon, in which the cracks are distinctly visible). Then one gives the second coating with the same clay and exactly in the same way, i.e. modelling the peculiarities of the different limbs. Generally two coatings are given in this variety of clay but, if necessary, one more coating may be given. In this clay itself, however, most of the details of the body, except the head and fingers, are brought out.

THE METHOD OF JOINING THE HEAD

If the head too is modelled on the trunk along with the body, which is often the case with Gaṇeśa's figure, but with other images rather rare, then there is nothing special to note here, for the work of entire body follows a given course. But the heads in this practice are made separately, either by hand or by means of casting from a mould. In either case this is the stage, when it should be attached to the body, for the major work in clay is over by now, and if something still remains to be done, that is concerned either with polishing or minor parts as fingers or secondary items as ornaments. As a first step in the process of joining the head, a dowel cut out of bamboo slit, is pushed into the upper plane of the trunk in an appropriate point. In this case one may describe this action as driving a dowel, if so wished, for the reason that straw allows such action, but the same word would be misleading in the case of cores made of other materials, which do not permit driving, for in that

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

case the previous work would be disturbed. Even in the case of straw core the possibility is not unlimited, for there are already clay coats over it, which may eventually fall down, if the jerks are great. As a matter of fact, a bamboo stick is usually kept in place, when the work of tying the chest part of the core is started, and this is removed either after tying that part of core is over or, rarely, just before the real dowels are pushed. This method of work will enable an easy way of pushing the final dowels. This point should be specially noted, for there is no clear idea, among the archaeologists as among art historians, of the real problems involved in using the dowels. Since the pieces of bamboo used while binding the straw have been removed after the work of cores of the trunks is over, one cannot see them any more, as in our Fig. 38. If some dowels are seen in our Fig. 36, they are final dowels employed in the previous year.[7] The size of the dowel prepared by cutting a bamboo slit into the shape — pointed at least at the one end to enable the pushing — is determined by the requirement. The part to be pushed into the trunk must be sufficient to give the strength to the neck to carry the weight of the head. If it extends above the trunk up to the upper point of the neck or a little more, that would do. In any case it should not reach the crown part, if the head to be attached has a cover or the skull area. When there is an opening at the top of the head, it does not matter even if the dowel extends slightly over the skull region (see for instance Fig. 55, in which the blunt or the flat end of bamboo dowel is visible at the centre of the circular opening). The angle of the neck should be taken into consideration, and the dowel should be pushed into the trunk accordingly. Around the dowel,

[7] It should be noted at this place that there are two practices. One is that every year the cores of straw are constructed afresh, and the other practice is that the cores prepared in the previous year or a few years earlier, are used again and again as long as the condition of the straw is good, only undertaking the minor repairs, if necessary, every year. When the images are immersed in the waters of a river or of a tank, etc. which is within the reach, after the rites for a day or for three days, as the case may be, are completed, the clay and other materials are washed away, but the cores are not removed or destroyed then and there, even if they are not planned to be used again. The same procession party which takes the images for immersion, brings back either the base frame or the back-frame, whatever it may be, along with the straw cores, which remain till the next year. This is the case with all sizes and images; that is why one sees hundreds of straw cores with their usual design or frames outside the private houses in verandas or under the roofs, not to speak of the temples or halls specially constructed for the purpose in villages or in towns. A small design of Kālī image seen in the foreground of our Fig. 40, is in fact one of such examples, i.e. the one that was used in the previous year. If somebody wants to form the cores every year, he too destroys the old cores only in the next year when the occasion comes again, and then shapes the new ones on the same frame. In both the cases of our Surul examples — the frontispiece and Fig. 36 (or 37) — the cores are not made afresh every year. The men concerned try to use good material and shape the cores more carefully. Moreover, they preserve them in a good place and also see to it that the clay is washed away fully without any residue remaining on them. Hence they use the cores once built for a number of years. The example reproduced in our Fig. 36 has been already employed for a few years, that is why the dowels seen on some of these cores are final ones employed in the previous year, but not the sticks used at the early stage of preparing the cores. While washing the clay at the time of immersion some have fallen down, others have remained; no attention is paid to them. Whenever the images are modelled again, either these dowels are used or rejected, for in any way some of them must be prepared newly, which is in fact a simple matter of cutting pieces of bamboo slits into shape. This explains why in Fig. 36 the dowels are present only in some cases while they are absent in the others.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

emerging from the trunk, the necessary amount of clay is pressed into the rough shape of the neck, on the top of which the head — either made by hand separately or the cast from a mould — is placed letting the part of the dowel, extending over the height of the neck, pass through the hole existing at the bottom of the head. At the same time the angle and the view of the head is taken into consideration, and accordingly, the head is fixed on the mass of the clay forming the neck region by means of adding further necessary amounts of the same material. In case of the necessity the heads are held in position by means of tying with thin cords or by some other such means till the masses of clay added newly in the neck region get hardened, and till the head is thus secure by itself (similar method may be seen in Fig. 42, in which the arms are held temporarily by the cords). Then those cords or any other devices, if adopted temporarily, are removed and the finer details of the neck are executed; our Figs. 54 and 55 show the work done at this stage in the front and the rear parts of the neck and of the head joint of the two different heads). We have pointed out earlier that the dowel used at the neck portion, whatever practice it may be, is meant to strengthen the neck itself. It is amply proved by this modern practice, as the head remains here without core, i.e. hollowed to need any support inside it. It is true, if the head is made separately in either of the ways explained, which is rather the most frequently adopted method.

THE PREPARATION AND APPLICATION OF THE SECOND CLAY

When the head is thus fixed, the next coating is given with another variety of clay. This variety is nothing but the silt obtained from the rivers, preferably from the Gaṅgā (Ganges). The latter is preferred perhaps because of its superior quality, apart from the fact that this river is considered by the Hindus to be the most sacred, and on practical level, it is easily available too in many parts of Bengal. For two obvious reasons the river silt is chosen for this stage of work, which is the final one to be done on the entire body of the image. First, although it has enough adhesive quality, it is not sticky, so that no cracks will appear when applied and, secondly, it gives a fine and soft appearance to the image. Nothing is mixed with the silt except pure water. But it is kneaded extremely well and left for a day or two before being used. First the cracks appeared in the previous coating of clay are repaired by filling them in with this silt. After waiting till these repairs also dry and, seeing that no more cracks have appeared, one gives a coating, rather thin one, with this clay on the entire surface of the body of the image, except on the surface of the head and of the hands. It is not applied on the hands, for they are as a matter of fact not yet finished at all, and in the case of the former it is unnecessary to use this clay, for they themselves are made of only fine clay and polished with wooden tool at the final stages of their work. In reality this final coat with silt is meant on the whole for nothing but polishing, and thus, it is the same as the slip which is reported to have been given on many of the archaeological finds discussed in the previous chapter.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

THE PREPARATION AND EMPLOYMENT OF THE THIRD CLAY

Neither fingers, nor the ears, nor any ornaments and their kind, are executed as far as this stage. If one notices the hands in our Fig. 42, they are only palms without the fingers, and even they too are not fashioned finally. Actually these shapes are the bases of the palms done with the first variety of clay, and a comparison between this and Fig. 36 would reveal the same as well as the way in which these are shaped. These have no solid base inside and, as such are apt to break very easily. In the ancient practice traced from the Sanskrit sources there are copper plates to protect these parts as well as the fingers from the danger of breakage. Here there is no such device not only in the case of the hands but also in the ears. This is perhaps on account of the fact that these images are meant for temporary use, and anyhow these last for a few days, even if they are formed purely with clay. But even then the care is taken by selecting a special type of clay. Potter's clay is used for the purpose of forming these and other similar delicate parts, such as the ears, ornaments, emblems, because being sticky and not containing sand or small stones, etc. it enables one to do the entire work at one time. The necessary amount of water is added to it, which is well kneaded. Jute is cut into small pieces and mixed with this clay before it is used. Thus, when it is made ready, the fingers and ears, besides most of the emblems, etc. are made with it in one stretch, as may be noticed in our Fig. 57.

PASTING OF THE CLOTH

With the completion of work in clay, except the ornaments, the stage comes for pasting cloth. When the circumstances do not permit pasting cloth on the entire bodies of the images, one attempts to do so on the joints at least, obviously for holding them secure. Whenever possible one tries in this practice too to paste it on the entire body, of course with the exception of certain areas, viz. ornaments, the kinds of drapery in which many furrows exist, and the like. This is also for quite an obvious reason. The cloth cannot be pushed into the cavities, and as a matter of fact the details will either disappear or lose sharpness, if one tries to paste it in such difficult areas. But on all the wider planes it can be pasted without difficulty. For this purpose also the same potter's clay is used, which is prepared in the same way as for shaping fingers, etc., with the exception that no pieces cut out of jute are added to it. Further, it is filtered through a cloth making it thinner by adding sufficient amount of water to it, but at the same time it should not be made too thin. Then a cloth with a fine surface or texture is torn out into pieces of different sizes according to the necessity. These pieces are dipped into that thinned out clay, and then the same clay is carefully applied at first to the given area of the image with the help of a flat brush and the piece of cloth, taken out from the pot (in which the thinned out clay is kept), is placed on that area stretching it out. While it is being stretched on the given area of the image, it is slowly flattened with a brush (see Fig. 56) as it will have no creases or rising patches or strips, so that it will remain

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

adhered to the surface of the image like the skin on the human body. It gives naturally a fine and tight surface, which is very favourable for colouring. Our Fig. 57 illustrates the stage after the completion of pasting cloth.

THE WAYS OF SHAPING EMBLEMS AND ORNAMENTS

According to the Sanskrit terminology adopted in the branch of learning related to the clay modelling or the statuary as a whole, emblems, vehicles, etc. are called *pratyaṅgas* while the ornaments *upāṅgas*. The former category of objects in the modern practice are executed not with a special care, but rather to filfil the iconographic demands somehow, and most of them are managed generally by modelling them in a rough shape and in small sizes too, as may be observed in our Fig. 57. The objects such as *triśūla*, trident, in the hands of Durgā and *vīṇā*, lute, in the hands of Sarasvatī, etc. are shaped by employing a light material, as a thin bamboo slit, or reed and the kind, and the trident in our Fig. 57 is actually made by employing the stalk of *kāśa* grass (Saccharum spontaneum), though some clay is applied on it and decorated with the other materials. Hence there is no more aspect or point that is important to be noted in this regard.

The ornaments, however, are fashioned with much care, and they are cast from the moulds, maybe with rare exceptions of this or that minor item. As in the case of the heads or the masks of the faces, the modellers themselves prepare the moulds of ornaments too, either in stucco or in unbaked clay. Our Figs. 45 and 46 show these moulds in the upper row and the casts taken from them in clay in the row immediately below them; thus the items arranged in the odd rows in each of the two vertical sections of our Fig. 46 are moulds and those in the even rows immediately below the moulds are the clay casts made from them. Both the moulds kept in the second row (i.e. the third from the top serially) are made of unbaked clay, and even the one on the right side is broken on its left side, nevertheless it can still be used. The smallest item in Fig. 45 is an anklet while the rest are the ornaments meant for tying around the neck. All objects lying on the right side of the Fig. 46 are the ear pendants, except the second one (serially the fourth item from the top) which is a necklace; those on the left side, are wristlets, armlets and so on. Sometimes, the wooden moulds are also employed, which naturally suggest that these are used for a long time. Nevertheless it need not be assumed that the same ornaments are repeated endlessly, and there would be little variation. These too are changed, and varied not less frequently, and in fact the ornaments applied in Bhubaṇḍāṅgā panel in 1956 (see Fig. 57 or 60) are the casts taken from the wooden moulds, and those found in our Figs. 45 and 46 are cast from the stucco and clay moulds in 1967, which moulds have been prepared a few years earlier. Whatever may be the material of which the moulds are made, the casts are always taken in clay. For this purpose potter's clay is employed, which is prepared in the same way as that meant for the fingers, etc., i.e. the cut-pieces of jute are added to it, obviously, in this case, for the tenacity. Instead of

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

potter's clay, any other clay may be used, but it must be fine and must have some adhesive quality. It is prepared thick, like plasticine, and should be soft and supple. At first a fine and filtered ash is sprinkled very thinly in the mould, and then the required mass of clay is pressed into it, at the same time flattening the back area of the clay mass. A small lump of clay is held by the tips of the thumb, index and middle fingers collected, and the different parts, especially the edges and corners, of the rear of the cast are touched with it giving a slight preasure as it catches the clay and lifted a bit only to detach the cast from the surface of the mould. When every important part of it is thus detached, the cast is finally removed from the mould, either with the help of clay lump or turning down the mould, giving support to the falling cast by the other hand. The cast ornaments are placed on some even area, as they face upwards, letting them become a bit hard in the air for a while. This is necessary, because if they are too soft they may lose the sharpness of the details and may even be torn out while pasting them in the proper place, when the need arises to press them a bit with fingers or even to bend them according to the roundness of the given area, for instance armlet on the upper arm. If they are too hard they will break down in this kind of work. When the casts are in proper condition — not too wet nor too hard — a thin clay, the same as used for pasting the cloth, is applied on the desired part with a flat and thin brush, to work as a gum, and then the cast ornament is placed in correct position, and finally fixed by giving a delicate pressure with the finger tips. Our Fig. 57 illustrates this aspect, for it has been photographed immediately after this kind of work. Thus the ornaments in the modern practice of Bengal are executed mostly by the *appliquée* method. With the execution of the ornaments the entire work with three kinds of clay is complete.

MEDIUM ADDED TO THE COLOURS

When the work with clay is over, the real modelling of the images is complete, and hence now the stage comes for colouring. Technically speaking, the most important aspect of colouring is the binding medium added to the colours. The medium prepared out of tamarind seeds is quite commonly employed in this modern practice. After the removal of the skin, the tamarind seeds are cooked very well for a long time in a great quantity of water. When the water becomes slightly thick and sufficiently sticky, it is taken from the oven and filtered. This is the substance added as a medium to all colours, including the white for grounding.

THE PREPARATION OF GROUND FOR COLOURING

Unless the proper ground is made the colours do not shine and for this purpose white is obviously the most suitable. The white earth, i.e. chalk (*khaḍi* in Bengali) is employed for this purpose in this practice. The necessary amount of binding medium prepared out of

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

tamarind seeds is added to this white, and a few coatings are given with it onto the entire figure, including the ornaments, etc. to get the proper ground.

APPLICATION OF THE COLOURS

It may be supposed that in former days the artists prepared colours by themselves from different earths as red and yellow ochres and other vegetable substances, for example, *nīl*, indigo, though we have no definite knowledge about it. The colours prepared chemically and readily available to purchase in powdered form in packets, are generally used nowadays to paint the images. To these also the same medium abstracted from the tamarind seeds is added, and iconographically appropriate colours are painted on different images and parts, though the tendency to ignore the iconographic prescriptions has set its foot in recent years. Generally the colour is applied in two coatings and, if necessary, also in three coatings, at least on certain areas.

COATING OF VARNISH AND SIMILAR LIQUIDS

Sago is cooked with water and, shortly after it begins to foam, the water (*phena* being the Bengali term used in the context) is taken when it is neither too thin nor too thick. One coating of this water is applied on the colours, when they are quite dry. The purpose of using this water, is to prevent the varnish, when applied, from mixing with the colours. Needless to say that on account of this coating the density of colours also increases to a limited extent.

And later, when the sago water is also dry, a coating of varnish is applied on the surface of the figures. Only in certain places (such as the village, Bhubaṇḍāṅgā and so on, our Fig. 60) and, if so desired, some gold and silver dust is mixed with that part of varnish which is meant to be applied to the ornaments in order to obtain the effect of those metals. These are not, however, the powders of the real metals, but a kind of gold-and silver- coloured chemical dusts. This varnish is prepared locally, and available in certain special shops which sell the required materials for image making or for religious rites, etc. It is interesting to note that this particular varnish is called *ghām-tel* in popular Bengali language. Literally *ghām* (<*gharma*, in Sanskrit) means perspiration or sweat and *tel* (<*taila*, in Sanskrit) is oil, but as an idiomatic phrase it conveys the oil that gives the effect of light or mild perspiration. Perhaps there is no wonder that such a phrase comes into vogue, for Bengal is climatically one of the highly humid tracts of the country, where one perspires very much particularly in the rainy season, and this condition continues, though in quite a less degree, also in the period when the *Durgāpūjā* comes. What this expresses is the shiny effect that results in from the use of varnish, which we tend to suggest to be what is known as *lāvaṇya* throughout the country and in the history as a sign of beauty. The use of varnish increases the effect of density of colours greatly. The effect is thus brilliant and catchy. Unfortunately, however, a

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

tendency is gaining the ground rapidly to abandon the use of varnish, and also the sago water linked with it. Moreover, the white is added to the colours turning them light. As a result of all these, many images nowadays look very pale. One more feature to be noted here is that the hair — whether of the goddesses which is shaped very long (Fig. 60 or the frontispiece) or of the mane, etc. of the lion — is not modelled in clay, but instead, the jute is dyed in the required shade of colour, and pasted or made fixed by other means. In the case of lion the natural jute is sometimes pasted without dying it at all. Since how long this material has been in vogue for this purpose is a question which we cannot answer.

OTHER DECORATION

The decoration that does not make the integral part of the modelling may be considered external, say, for example, the one which is done around the panel, though that goes in the name of aureole or other similar objects. It may also be described briefly, as this sort of decoration, known in Bengali by a common term *ḍāker kāj*, which is often done even extravagantly, is very closely associated with the Durgā panel of images, at least in view of the people of this province. It is done mainly with two materials, viz. the soft wood of Aeschynomene aspera, called in Bengali *śolā* or to put it precisely, *phūlśolā* (in common English "cork wood") and the paper of particular kind (the technical name of which is not known to us) which is thick, one side of which is very shiny with brilliant colours while the reverse is matted in white. One may notice even within a limited locality that in some houses or places the decoration is done mainly with the paper, though the cork wood is also used for certain objects (as in our frontispiece) or *vice versa* or both more or less in equal proportion. This is a more traditional way of decoration. In many places (see our Fig. 60), however, neither of these materials are employed nowadays, but it is done with simple coloured tissue paper, etc. or some other kinds of materials are also gradually being adopted. Perhaps it is also an interesting point that what we have indicated above as a more traditional way of decoration is generally done not by the artists themselves who model the images, but by other people practising different crafts.

PEOPLE TRADITIONALLY PRACTISING THE CLAY MODELLING OF UNBAKED TECHNIQUE

At the end of the account of clay modelling proper, it may be of some use, from the historical point of view, to see who are the persons practising this art for generations in this part of the country. The persons belonging to the caste, *kumār* (*kumbhakāra* in Sanskrit), generally having the surname, "Pal" are a class of people doing this work traditionally. Since they are *kumārs*, i.e. potters, there is not anything special in this fact to indicate some unknown or unexpected aspect, for they are workers in clay, whether it is pottery or images or whether it is baked or unbaked technique. But there are people belonging to other class, who have

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

been practising this art traditionally for generations. They are called *sūtradhāras*. As is well-known, the word, *sūtradhāra* (lit. the holder of threads) in Sanskrit architectural treatises means architect. The architects in ancient days, and even for that matter, till today, though now rare and confined to the traditional people, have been skilful in several arts and crafts, including carpentry. On this ground even the mere carpenters came to be called in Bengal as *sūtradhāras*. The present incident is a proof that the artists formerly used to work in various media, and further, we may infer that on account of the ancient practice of constructing the armatures in wood, the carpenters have been employed to model the images in unbaked clay, which is perhaps an important point throwing light on the historical aspect in relation to the unbaked clay technique, viz. in Bengal too there has been a practice to construct the armature for each image, that too with wood. And, as a matter of fact this is indicated also by the word, *kāṭhāmo* or *kāṭhām*, which has been discussed. There are also people belonging to some other class, who are known as *paṭuās*, i.e. traditionally professional painters (although derivatively it means not just the painters, but the painters on cloth). We have no knowledge whether these people have made a special caste of themselves or anyone who has taken the painting as profession has been called *paṭuā*. In any case these people also, traditionally speaking, model the images in unbaked clay in certain places, apart from painting the same Durgā panels as well as varying subjects. It may be, however, clarified that the modeller of Bhubaṇḍāṅgā belongs to none of these three categories.

COMPARISON AMONG DIFFERENT PRACTICES

As far as we have been able to gather, these are the details of the present practice. It is not out of place to take a comparative account of the ancient practices on the one hand and the present practice on the other.

From the above explanation it is evident that in modern practice, too, the armature has not totally disappeared, though it does not exist as a constructed complex. This reduction seems to be a result of employing the straw to obtain the major bulk of the image. It means that the use of straw has influenced the nature of the armature. In the circumstances the use of *aṣṭabandha* cannot be expected here, since it is meant for applying to the wooden armature only. Without any doubt, the straw in modern practice takes the place of the ropes of ancient practice, though there is some difference in the way in which they are employed. In ancient practice the ropes are tied in two layers and the clay is applied between them, while in modern practice the straw is used only once. Similarly, river silt in modern times takes the place of the *śarkarākalka* of ancient practice. The cloth and colours are employed in modern practice, too. Thus, in many respects the modern practice tallies with that of the ancient one known from the texts, though some materials are replaced by others: the wood by bamboo, the ropes by straw and the *śarkarākalka* by the river silt. All these changes can be explained by

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

one factor. The images are being made in Bengal today only for a temporary[8] worship of either one or three days. For this reason no one would spend the time and the material, too, which are required for modelling the images that are expected to last for centuries in the temples.

As far as the *upaśūla* is concerned the following must be noted. Although the Kālī figure is made erect and free-standing, it does not require the sort of *upaśūla* that is known from the texts, because in this case, there is no frame of the armature, constructed by joining different parts. On the contrary, two bamboo sticks which run through the legs as far as the stomach are posted in the pedestal. These sticks may hold the weight, though this device causes too much rigidity in the posture of the image. Moreover, a third element, also a bamboo stick, is posted here in the pedestal to support from the rear but only from below. For the same reason, i.e. for not having a constructed frame existing in all the limbs, the Durgā image and its kind do not require such an *upaśūla*, but they need some small elements to hold them in position against the back-frame; hence those elements are what we called "minor supports". Thus there is a difference in this case between the methods traced from the Sanskrit sources and those adopted in modern practice. On the other hand these are the same as reported by some archaeologists to have been used in the Indo-Afghan school, provided that the archaeologists have correctly described them. But it is difficult now to conclude that the use of "minor supports" in the modern practice is the continuation of the tradition known in the Indo-Afghan school, for there is a vast gap in our knowledge, and for after all, the adoption of this device is a commonplace determined by the needs, and these could as well be independent developments, though certainly there is a room for further investigation.

A point somewhat related to the topic of "minor support" may be explained in this connection. We have mentioned that the figure of Kālī is free-standing. This does not mean that the images of Durgā and her attendant gods and goddesses are made in relief. These are made against the wooden back-frame, obviously very close to it, and, moreover, this frame is generally kept near the wall. Consequently the devotees never have a glance at the back of the images, nor do they have any curiosity to see what the backs look like. Even in ancient practice, as is known from the texts, the case is not different. In spite of this, it is difficult to decide whether or not the warning that the texts give against making the clay images in relief really influences the present practice too. But the images of Durgā and her

[8] J. N. Banerjea explains the images made in the modern practice of Bengal to be *kṣaṇika* in the sense of an impermanent ones (see D.H.I., p. 209). *Kṣaṇikas* are also impermanent, it is true. But it seems better to maintain the distinction between *kṣaṇika* and *tātkālika*. The former should be explained as momentary, and the latter as temporary. When certain figures are described in the ancient texts as *kṣaṇika*, it implies not only that the time is of very short duration, but also suggests the durability of the figures, which is dependent on the material employed for making them. Those made of the powder of rice and similar things, sand and so on are described as *kṣaṇika*, but we never come across any reference where clay images like those now made in Bengal are described as *kṣaṇikas*. Such images, as these, are meant for temporary worship and, from this point of view, they are *tātkālika*, i.e. those meant for the use of a given period, may be a day or three or more days, in other words, which are not meant for an indefinite time, but if they are not immersed in water, they last for decades at least,

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

attendant deities, though made closely against a frame, are in reality fully formed, i.e. they are three dimensional, as may be observed from Fig. 58 (which is Lakṣmī's image present on the right side in the Bhubanḍāṅgā panel). For the same reason, it must be added, the backs of the figures are treated negligently.

According to the practice traced on the basis of ancient Sanskrit texts the question of making the heads separately, even by hand, to be attached later on does not arise; in that case it goes without saying that it is out of question that there can be any scope to resort to the mould. The head must be modelled on their places along with the rest of the body. Nor is there any mention of cast ornaments in those Sanskrit texts. In the modern practice of Bengal the heads and the ornaments are made separately so often that one may call it a general rule. Thus there is a difference here between the two traditions, viz. the one traced from the Sanskrit sources and the other is as practised in Bengal today. Again this aspect is very similar to that known in Kāśmīr, Jammu and in the regions of the Indo-Afghan school, but with one exception. If the heads are made in those regions separately, they are casts taken from the moulds, but no example is known to have been made by hand yet modelled separately. This is not in fact possible in the said regions, for those images are meant for the permanent use and, hence the head cannot be made hollowed, and without being hollowed it is not technically sound to make the head separately by hand. Except this difference, the modern practice of Bengal tallies with that of those regions and, it may not be wrong in this case to assume the connection between these, though there is a gap in our knowledge as in the case of the "minor support", because this is not determined by certain conditions, as the "minor support" does; one can do away with the moulds, but one cannot do without "minor supports".

SOME VIEWS ON THE HISTORY OF THE PRACTICE OF UNBAKED CLAY MODELLING IN BENGAL

Investigation into the history of the present practice of clay modelling in Bengal has not progressed. Some people, however, have tried to suggest the dates which are presented here. Pāñckaḍi Bandopādhyāya observes that it is a general belief that a *Jamidār* (landlord) of Bādurīya was the first person responsible for making the image of Durgā for worship. If it is true, this practice can be traced to eight or nine hundred years back. Here he does not clarify with what material these images were made at that time. But again he states that his investigations have led him to believe that the practice of making the clay image of Durgā for worship cannot be older than two hundred and fifty years. In support of this, he draws attention to certain features noticeable in the present practice, features which appeared, according to him, as a result of the influence of English culture.[9] Elsewhere he observes

[9] P.B.R., pp. 171-72. We are grateful to our friend Kānāi Sāmanta for his kindness in drawing our attention to the Bengali literature on the practice in Bengal, referred to in this and in the following three notes.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

that, on account of the predominance of Buddhism in Bengal at a certain period, many believe that the practice of making the images in clay for worship came into existence only in Bengal, and that it is not commonly found elsewhere in India.[10] He also repeats this elsewhere.[11]

Another scholar, Yogeśacandra Roy notices that Bhavadeva Bhaṭṭa discusses the worship of the Durgā image made in clay. He also mentions that there is no evidence to trace this practice to a period earlier than the 10th century A.D., because Bhavadeva Bhaṭṭa belongs to the 11th century A.D.[12]

In a recent article: *The Worship of the Clay Image of Durgā*,[13] Gaurīnātha Śāstri considers the problem in the light of the statements of certain texts, belonging to various centuries (though always without references). The earliest of his definite source is the same Bhavadeva Bhaṭṭa[14] as mentioned by Yogeśacandra Roy. Thus according to Śāstri too the practice of worshipping the clay image of Durgā in Bengal cannot be traced earlier than the 10th century A.D. on the basis of definite evidence. As he is able to show, to some extent, the continuity of this practice, he refutes[15] the views according to which it is of recent origin — say, some two hundred years old.

The aim of all these writers is to deal with the worship of the clay image of a particular deity only, viz. Durgā, that too only in Bengal. Of these writers Bandopādhyāya is inconsistent and especially his conclusion that this practice has not been found elsewhere is rather hasty. But others have succeeded in throwing some light on the worship of Durgā image made of clay. As there is nothing in these attempts that throws light on the technique, these efforts are of partial value to us, for we are interested in a given technique, but not the worship as such. When it is simply said to be a clay image, a plaque can also be described so. Further, even if a clay image of a big size used to be made in the 10th and in succeeding centuries more or less in similar technique, this does not necessarily mean that its core used to be built with straw and against the back-frames as they are employed in recent times. So it still remains to be seen, what type of technique was adopted at the time of Bhavadeva Bhaṭṭa.

[10] P.B.R., p. 211.

[11] Ibid., p. 159.

[12] P.P., p. 84.

[13] B.V., pp. 266-270. He is concerned with the practice in Bengal only, as his very beginning unmistakably suggests, but we notice two more items in this article. At the end he tries to trace the Vedic origin of Durgā (p. 269) but here there is no word of clay image, so this matter is not of interest to us at present. Secondly, with regard to the question of this worship in India as a whole, he believes that it can be traced back to a very remote age (p. 269). It might be true, but in the absence of evidence, the matter should remain as one of the conjectures.

[14] Ibid., p. 268.

[15] Ibid., pp. 266-68.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

If the cores were not made with straw at that time, since when has it come into vogue? This point is important, for the straw brought certain significant changes in the technique. Moreover the question should not be considered in isolation, as Bandopādhyāya did for want of information or otherwise. Now we know that the similar clay modelling has been widely practised, and the present circumstances do not permit to trace its origin to any particular place, and it is doubtful, if ever that could be possible.

Even if the question of employment of straw or its kind for the core arises there is, as a matter of fact, some literary evidence suggesting its prevalence in still earlier times than the Bhavadeva Bhaṭṭa's age. Commenting on a passage of the *Chāndogyopaniṣad*,[16] Śaṅkarācārya explains that the water coming out of the body of a person who does good deeds, i.e. sacrifices when it is burnt on his demise, will take him to the moon, along with the smoke, and the same water would become there the basic material (*ārambhika*) for the re-creation of the physical body (*bāhyaśarīra*) of the very individual, the material which is analogous to the *kuśas* (Poa cynosuroides) and *mṛttikā*, clay [serving as the elements of an image]. We are to suppose that the *kuśa* grass referred to here used to be employed for the puspose of making the core. This is a technical point which is not found in Bhavadeva Bhaṭṭa's reference to the worship of clay image. It is also interesting, for it is the *kuśa* grass but not the rice-straw that is said to be one of the two major materials with which the image is made, though seen materially both (the *kuśa* grass and rice-straw) are of the same kind and also functionally both serve the same purpose. When this subject is used as an analogy in a philosophical discussion, it indicates that this practice has been very popularly known. Thus, historically, it takes us back at least to the 6th century A.D., because Śaṅkara's age is generally accepted to

[16] *antyāyāṃ ca śarīrāhutāvagnau hutāyāmagninā dahyamāne śarīre tadutthā āpo dhūmena sahordhvaṃ yajamānamāveṣṭya candramaṇḍalaṃ prāpya kuśamṛttikāsthānīyā bāhyaśarīrārambhikā bhavanti/* Ch. Up. 5.10.4 (p. 284). We tried to give the general sense of this passage in the body of our text. The *kuśas* and *mṛttikā* are mentioned in this passage by way of analogy, as is proved beyond doubt from the use of the word *sthānīya*. Hence the question arises: the analogy between what? This cannot be an analogy between the water on the one hand and on the other the material of which the human body is made, because the body is not known to have formed with the *kuśas* and *mṛttikā*. True, the flesh of the human body is some times metaphorically said to be *mṛttikā* or it is supposed to be one of the five elemental aspects of which the human body is made, i.e. the flesh represents the aspect of the earth. Even then it cannot determine that this is the analogy between the water of the corpse and the basic materials of the human body, because the *kuśas* cannot be explained in the same way. They are not known to represent any aspect of the living human body either metaphorically or in other way. Hence this implies that Śaṅkarācārya kept in view something else other than the human body, when he used this analogy. It is then to be supposed on the known grounds that he has the clay image in view. Thus this passage refers by implication to the practice of employing *kuśas* and *mṛttikā* to model an image, although no word connoting the image is used in this place.

Our friend, Prof. Wilhelm Rau has very kindly sent us this reference in his letter of 17th August 1969, when he came across it during his study while spending Summer holidays in a place in Bayerischen Wald. And it was very difficult for us to resist the temptation to incorporate it in this work, although the typed script was with the press. This supports our theme, which we are going to discuss in Ch. XV, that many references to the practice of clay modelling may be found in the Sanskrit and other early literatures which are too vast for anyone to go through with a single purpose in view.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

be the 7th-8th centuries. As has been discussed in the previous chapters the earliest *Āgama* text, viz. the *Vimānārcanākalpa* belonging to the 8th century A.D. describes a technique of somewhat different nature. In view of this one has to deduce that there have been two currents of modelling clay images in the same period. Whether these two modes used to be adopted to serve different purposes is a question which would remain anybody's guess until further material comes to light. But it may not prove to be misleading, if one infers that the core used to be made with *kuśa* grass or even with any kind of straw in all those figures which were supposed to serve the impermanent purpose, as is the case now in Bengal; while the technique described by the *Āgamas* used to be adopted for the images intended to remain permanently, especially in temples. This reference also poses a geographical question. It cannot be now decided whether it was to be found at that time in Saṅkara's native province, i.e. Kerala only or in other parts of the country as well.

At the end it may be observed that the striking similarity between the present and the ancient practices proves beyond any doubt that the clay modelling as seen today in Bengal is not the sudden occurrence of a certain time, but it is definitely a continuation of a very ancient tradition, with some changes determined by the circumstances.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

Chapter XV

HISTORICAL ASPECTS OF THE TECHNIQUE OF UNBAKED CLAY MODELLING

PROBLEM OF DEVELOPMENT

An account of the technique of unbaked clay modelling is thus given in the foregoing chapters, as fully as the circumstances permitted, on the basis of all the three possible sources, viz. the literary and archaeological evidences and the modern practice. And it is worthwhile to discuss now its historical aspects; historical, not so much in the sense of its internal development, but rather of its practice as is known at the moment to have prevailed in course of several centuries. By development we mean any change of some significance, irrespective of the question whether it is an improvement or decline, which is a qualitative judgement. As a matter of fact such a judgement cannot be passed in certain cases, for instance, the modern practice as seen in Bengal. Here the straw is used for core, and if some kind of armature is made in certain cases, the bamboo slits are employed for the purpose. There is no doubt that the modern practice on the whole is the continuation of the ancient technique of the kind that is traced from the *Āgama* texts. Looked at from this point of view, the employment of these two materials instead of coconut ropes and strong wood, is supposed to be considered as a decline for the reason of their relatively nondurability. But actually this does not apply to it, as the employment of the straw and bamboo slits is determined by the fact that such images are meant for the worship of one day or three, as the case may be, after which they are immersed in water, i.e. destroyed. This means that there is no intention at all on the part of the concerning persons to preserve them permanently, hence the principle of durability cannot be taken in this case as a criterion for the qualitative judgement. Hence this is neither the case for improvement nor for decline, yet it represents a change determined by the purpose, and at the same time it is significant too, because many aspects, as explained previously, have altered on account of it.

At the same time it must be noted that whatever motives may be behind it the modern practice is an excellent instance indicating the development. As has been discussed at the end of the preceding chapter, the employment of *kuśa* grass for the core and clay for general modelling is known to have been in vogue already in the period earlier than Śaṅkara, viz. in the 6th century A.D., supposedly at least in Kerala. This indicates that some aspects of the change seen in Bengal are not a recent development. Nevertheless it remains to be seen when precisely this change has come into being for the first time, and whether there have been any further alterations — even minor ones — in course of time before we can see it today in its present form. On the contrary, even this much of development could not be

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

noticed in the ancient practice as known from the archaeological finds. It is not yet known if any kind of armature has been employed in the clay images coming from the Indian regions of Indo-Afghan school. It is very difficult to take the present information to be authentic on its face value, in view of the two facts, viz. the archaeologists have not paid sufficient attention to the technical aspects, and its employment is known in the neighbouring regions — Kāśmīr and Jammu on the one side and ancient Kapiśa on the other. Take for example the application of the final clay coat in thin form (or slip). We have noted that the Akhnur heads reproduced here, have not any such coat, and we inferred that it might be on account of their being casts. Whether this is a universal practice with casts or not cannot be decided unless such examples are studied in greater number, that too, preferably those coming from various sites and periods. Even if the same modeller executes several images, he has to make certain adjustments differently in the given circumstances or depending on the design or composition, etc., hence it is not possible to decide, unless a considerable number of examples are carefully studied, which is a real change or which is a mere adjustment. By this it is not stated that the existing material is insufficient. This may or may not be true; certainly one cannot draw such conclusions, if one has to depend on the archaeological literature hitherto produced; moreover, in spite of the existence of a considerable number of extant images, they are passing under various wrong headings. If all this riddle is solved and the existing stock is studied, it may be possible to observe certain development that took place either in different places or epochs, but obviously that is a future work.

Even in the case of literary evidence, the situation is not different from the above. The preparation of clay and its classification as found in the *Kāśyapaśilpa* is far better than that found in the *Vimānārcanākalpa* which is supposedly four hundred years earlier than the former. Hence it is tempting to conclude that as time went on the technique has more and more been refined, but this seems questionable in view of the fact that already from the 8th century A.D. the clay began to lose gradually the importance it once enjoyed, as can be traced from certain statements of the *Vimānārcanākalpa* itself,[1] though it has never gone out of scene altogether. If that were so, according to this it is natural to expect that the account of the technique as found in earlier texts should be sounder. If this were not the case, what could be the reason for this ? No answer can be given until the investigation in the field advances. Ignoring this factor, some further points may be raised here to illustrate our standpoint. There is a prescription in the *Vimānārcanākalpa* to add some amount of cotton (*kārpāsatūla*) in the *śarkarākalka*, which is absent in the *Kāśyapaśilpa*. The technique as described in the latter text is certainly better in many respects than that found in other texts used here and, as stated, that is the reason for which we based ourselves mainly on this source while writing the first eleven chapters of this book. In that case it is difficult to find out an explanation why such an important ingredient is left out in this source. Similarly, the instruction to use

[1] See our article: *The Rôle of Polychromy in Indian Statuary*, (Section V) A.A., Vol. XXIV/2, pp. 128-131.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

several *upaśūlas* in the case of reclining posture, as found in the *Samūrtārcanādhikaraṇa*, is surely sounder than that to be found in other Vaikhānasa texts we used here. This should not have been the case, because it is seven or eight centuries later than the *Vimānārcanākalpa*; moreover, the account of the technique on the whole, as is given in it, is shorter and in many respects not meaningful. How is this possible? No explanation can be found at the moment.

In the case of the literary evidence of this kind there is a special problem to be always kept in view. The *Āgama* literature on the whole is a compilation, irrespective of the question whether a given text is compiled by an individual or by several persons. Some people tend to take the word compilation, in the sense of collection made indiscriminately or without understanding of the subjects dealt with, and some authors explain it in that tone. But that would mean doing injustice to the literature as well as to its authors. Admittedly such cases also could be found, but that must not be made a general rule, as is proved by the *Śilpa-ratna* (which bases itself mostly on the *Āgama* literature, though by itself it is not an *Āgama* text). This work is a verbatim compilation to a great part, yet its author shows remarkable understanding of the subjects (to which topic we return later.) We use the word, compilation in the following sense. Innumerable subjects are dealt with in the *Āgamas*, and it is not humanly possible for each individual to be expert in each of those subjects. In that case one takes the material from someone else's experience or book, but with the understanding of the most, if not all, of those subjects. This is too evident from several *Āgama* texts, and any student of different topics can realize it, although a mere historian of literature with philological outlook may pass unkind remarks on them, on account of his own ignorance of the subjects, except philology. Hence it should be studied to what extent a particular author of a given *Āgama* text has drawn the material from older sources and how far he has added to it from his own experience or from his contemporary trends. This is a stupendous task and similar to an editor's work in tracing out the parent manuscript or manuscripts. Every one having a little acquaintance with the *Āgama* literature knows to what extent the study of this literature has advanced. In the circumstances it is more difficult to decide the question of the development of the technique of unbaked clay modelling on the basis of the literary evidence.

It may be repeated that the technique in the field of art changes less rapidly than even the style; hence it is highly necessary to have more data to read the internal development of the technique. Further, it is also a problem to be decided which change is the real one, and which is a mere adjustment that an artist must make in the given circumstances. Moreover, certain changes are conditioned by geographical or local factors, which must be studied carefully and explained in a proper way. Certain aspects, as they are found now in the archaeological finds as well as in the ancient literature, are pointed out above, on the basis of which a brief account of the development of the technique could have been given, if the other aspects, contradicting them, are ignored or suppressed. But it is better to leave the matter

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

as it is rather than drawing false and in the long run misleading conclusions in order to show the historian's air. Nevertheless those factors can be taken as starting points in any future investigations of the internal development of the technique. It is, therefore, worthwhile now to look into the question of its practice in various centuries and other historical issues, such as whether it was evolved in the land or borrowed from somewhere, and if the former is the case, when did it begin, etc.

CHRONOLOGY AS KNOWN FROM THE ARCHAEOLOGICAL FINDS

As far as the chronological aspects are concerned, we have already summed up the results of our discussion of the archaeological finds, i.e., of extant images at the end of the XIIIth chapter, and there is no point in repeating the same here. It suffices, however, to mention that the early extant examples known up to now belong to a long period of eight centuries — from the 1st to the 8th centuries A.D. — and what is more important in this respect is that they are spread over each of the eight centuries; in one century they may be few and in another their number may be great in comparison to this or that century.

CHRONOLOGY AS SUGGESTED BY THE LITERARY SOURCES

In the next step the same topic should be discussed on the literary basis. For the sake of clarity and better understanding, the literary evidence should be classified, firstly as referring to a real image or supposed to be the one that was really created and existed and, secondly, as describing the clay image with or without the indication or elaboration of its technique.[2] Huei-ch'ao, a Korean Buddhist pilgrim, who visited India in the beginning of the third decade of the 8th century A.D., reports to have seen the images of the first five disciples of the Buddha, which were formed out of unbaked clay ("Lehm") "within the *stūpa*" in the kingdom of Vārāṇasī,[3] and on the basis of the association of the Buddha's first sermon with

[2] In arranging this material the usual chronological sequence is not followed, and mostly it is discussed in an ascending order for the obvious reason of indicating the antiquity of the technique.

[3] To quote Fuchs' German translation of the Chinese text: "... in ... Tagen kommt man dem Land Vārāṇasī."

"Auch dieses Land ist öde und ohne König (Lücke). Dort (sind die ersten) fünf (von Buddha bekehrten, nämlich) Kauṇḍinya (u.a.); man sieht ihre aus Lehm geformten Statuen im Innern des Stūpa (Lücke)." See H.P.N.Z., p. 9. Here it may be pointed out that the images referred to in this passage are "Lehm" figures, and the word, Lehm in German, never means terracotta, but always unbaked clay, unlike the English word, clay, which is somewhat vague. The German term, Ton is used at times to indicate unbaked clay images, although it denotes too often only terracotta. Yet it is not as vague as the English word, clay. The pilgrim states to have seen the images inside the *stūpa* (im Innern des Stūpa), but it is not clear whether he means by it inside the court of a *stūpa* or in a temple, say the *caitya* hall containing a *stūpa*.

In a recent article, *The Korean Record on Vārāṇasī and Sārnāth* Jan Yun-hua again gave this pilgrim's account of Sārnāth, and Dr. K. K. Sarkar was kind enough to bring it to our notice. Jan translates the same passage in the following way: "Now, statues of those five [monks including] Kauṇḍinya are modelled inside the stūpta..." (V.I.J., Vol. IV/2, p. 266). Both these translations differ from each other in many respects, including the very nature of the sentence, but it is for the Sinologists to go into the details. For our purpose it would be enough to note that

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

Sārnāth we may not be wrong to take it for granted that he has seen them in that sacred place itself. The fact that Huei-ch'ao has seen them at this time does not determine their date, and certainly they are earlier. But when the question arises how far they are earlier, it is anybody's guess. Hence that question must be left open. Though in itself it is a literary source, it is a semi-archaeological evidence, for it is a reference to specific clay images that existed at that time. True, he does not mention the technical aspects save one, viz. unbaked clay (Lehm). On the basis of this single expression as well as on the fact that these images are executed in the *stūpa* for the commemorative purpose, one can reasonably take it for granted that they are executed more or less with the same technique as we have discussed in the chapters I-XI and XIII. This is a highly valuable information, for it proves in a semi-archaeological manner that the clay modelling has been prevalent in those centuries not only in Gandhāran and Indo-Afghan schools and their neighbouring regions, Jammu and Kāśmīr, but also in other tracts, in the east, as far as Banaras. Similarly, the Ceylonese chronicle, the *Mahāvaṃso* states that when king Bhātikābhaya returned after seeing the richness of the relic-chamber of the *stūpa* ("*cetia*"), he worshipped it by donating unbaked clay images (*pottharūpa*) which were similar to those very (*eva*) specimens, existing in the chamber.[4] Although this Pāli chronicle was composed in the 6th century, it recorded the event that took place in the 1st century A.D., as the said king reigned in the middle of that century. This is also a semi-archaeological evidence, not only because of the fact that this text says that Bhātikābhaya got the images made, but also because of the fact that he got them made on the model of those very specimens he saw in the temple. The latter point is historically more important proving the existence of still earlier examples, which might even go back to some period in the B.C. Of course it is connected with Ceylon, yet this event can prove the prevalence of this unbaked clay technique at this time in India too, as it is after all related to Buddhism, and hence the similarity of Indian and Ceylonese techniques of unbaked clay images can be taken for granted. Further, this is an evidence for the prevalence, in B.C. or

according to the Fuchs' translation the images were of clay medium whereas, according to that of Jan's, simply they "are modelled". When we think in terms of English usage the modelled images could be stuccos as well. Hence, only the Sinologists can again tell us whether the Chinese words denoting modelling invariably mean only the clay images according to the usage or they also give way for a different interpretation, viz. to imply stuccos as well. On the basis of Hsüan-tsang's silence about those images Jan infers that they might have been modelled "after Hsüan-tsang's departure" (ibid., p. 267). Perhaps it is not safe to infer the date of the images in question on the basis of Hsüan-tsang's silence, for, according to Jan, he did not make any mention of even an important piece of sculpture, viz. the Lion Capital (ibid.). The issue of their date should, therefore, remain open until some decisive evidence comes to light.

4 *dhātugabbhavibhūtiṃ so sabbaṃ disvā mahīpati/*
nikkhanto tādeseh' eva pottharūpehi pūjayi//

M.V. (Ch. 34, verse 51), p. 283, see also M.V. (Eng.), p. 242. The word, *pottha* (Skr. *pusta*) is a general term indicating the objects made of a variety of materials (we discuss this topic in the next pages), and there is no reason to consider that in this place it conveys something other than the clay image, as Geiger rightly translated. We are grateful to our friend, Prof. Wilhelm Rau for drawing our attention t this reference.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

at least in the 1st century A.D., of the tradition of unbaked clay technique, in the south too, as far as Ceylon, a culturally closely related neighbouring country.

Coming to the descriptive nature of the literary sources, it must be noted at first that the four *Āgama* texts utilized here, viz. the *Vimānārcanākalpa*, and the *Kāśyapaśilpa* belong to the 8th and 12th centuries A.D. while the *Kāśyapajñānakāṇḍa* and the *Samūrtārcanādhikaraṇa* are assignable to the 16th century or the latter maybe even to the 17th century. This indicates that the technique of unbaked clay images has been in vogue in these centuries, and on the basis of the fact that it is dealt with elaborately in an 8th century text (the first of the above four), it can be traced back at least to the 6th century A.D. On account of their later date one need not sceptically come to the conclusion that the description of the technique found in the last two texts is a mere copy from the older sources. Unless the supposed original account is known, it would be hasty to draw such conclusions. Be whatever it may, there cannot be any doubt about it, though we do not yet know the extant images of this age, that in these centuries too the practice has been uninterruptedly continued. Witness? The present practice itself, which is not of a late origin, though the technique might have altered to some extent, which has been elaborated in the previous chapter. For the reason of the origin of these texts in South India the technique as described in them need not be considered to be confined to that part of the country alone, for, more or less the similar description can probably be found in the *Āgamas* of the Pāñcarātra sect, which partly at least are supposed to be of northern origin. Śaṅkarācārya's reference to this subject, discussed at the end of the previous chapter, suggests the same age. It can be additionally noted from his reference that at least from the 6th century onwards there has been a practice, in which the *kuśa* grass and the clay have been the major materials of a clay image, the former has supposedly been employed for making the core. This is a very valuable reference, for it proves the existence of a second current of clay modelling simultaneously.

Still an older source is the *Mūlasarvāstivāda-vinaya*,[5] though no portion of it is devoted to

[5] M.S.V.; T.E., No. 1451, Vol. XXIV, p. 255b. This is a direct Chinese translation of the text originally written in Sanskrit. Prof. Shinya Kasugai kindly gave us this reference with a note of two lines through his letter, dated 8th April 1959. The Chinese text being inaccessible to us we had to approach the following scholars for details, who very kindly took a lot of trouble to render the help. They are: Frau Dr. Körner, Prof. Dr. Hans Eckardt, Fln. Dr. Johanna Fisher, Dr. Jan Yun-hua and Dr. K. Venkataramanan, to all of them we are grateful. The same topic is also found in the Tibetan translation (which too is made directly from the original source), M.S.V.; T.T., Vol. XLIV, p. 53/3; Tibetan p. 128a, lines 7-8; M.S.V.; sN.E., *Vinaya*, Vol. 10, Tibetan alphabetical No. tha, p. 217a, lines 5-6. Our thanks are due to Mr. C.R. Lama, for finding out this corresponding place in the Tibetan translation.

According to the versions given above, the chapter, that contains this topic, is the 11th one in the *vinaya-kṣudrakavastu*, which is one of the portions I-tsing translated into the Chinese [M.S.V. (Gilgit MSS), Vol. III, Pt. 2, introduction, p. vi, note 1]. This *vastu* in original, i.e. in Sanskrit, did not yet come to light (ibid., Pt. 3, introduction, p. ii). Nalinaksha Dutt, who edited the great part of the MS discovered in Gilgit, shows (ibid., pp. i-ii) how the *Mūlasarvāstivāda-vinaya* (in Sanskrit) corresponds with the Pāli *Vinayapiṭaka* in several parts, and accordingly one can expect that the topic of our present interest could be found in the corresponding chapter,

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

describe the technique elaborately as in the afore-said four *Āgama* texts, but it contains a brief statement with three technical points in the form of a simile. According to the context, as this writer came to know it, the Buddha explains to Nanda (who is perhaps the same as his step-brother) the process with which a child attains the fullfledged human form from the stage of germ in mother's womb. In this connection three similes are employed in a particular place, all of which are connected with clay, and two of them are: (i) how a craftsman gives a clay coat on wall and, (ii) how a potter develops his pot from a lump of clay. But we have nothing to do with these. The third simile is of our interest and of great value. It is stated there that as a clay image is developed by a modeller assisted by his apprentice, first by assembling the rods of strong wood (*ying-mu* in Chinese), then by tying the ropes over that assemblage and finally by applying varieties of clay over it, so also the child's body takes shape from the bones, veins and flesh. This tallies remarkably with the account of the technique that we traced from the *Āgama* texts, in enumerating three materials, viz. *śūlas*, *rajjus* and *mṛt*, which are in fact the major ones. (Perhaps we have to understand that the *śarkarākalka* has been included in *mṛt*; as already pointed out, the *śarkarākalka* is nothing but *mṛt*, although prepared out of lime stone.) Thus, this source having a brief description of the technique, undoubtedly takes us back a few centuries earlier than the date that an 8th century (A.D.) text, viz. the *Vimānārcanākalpa* indicates, although there is much uncertainty about its age as well as its place of origin. Hence anything said with regard to these two aspects should be taken to be only tentative. The *Mūlasarvāstivāda-vinaya* is considered to have been possibly composed or compiled in Kāśmīr some time between the middle of the 5th and of the 6th century A.D. This date is suggested not on any solid grounds, but only to serve the practical purposes, hence it may be possible that it goes earlier than this period. When this topic has entered in the text, it suggests that this technique has been widely in use, otherwise it cannot be utilized as a simile, which is a means either to explain the less known subject or to instruct a subject more clearly. Thus it can be believed, if one has to depend on this evidence alone, that this practice was already known in the early centuries of the Christian era. Irrespective of the question whether or not it is composed in Kāśmīr itself, there cannot be any doubt about it that this text has been widely used in that part of the country, for it has been the important stronghold of the Sarvāstivādins as well as the Mūlasarvāstivādins for a number of centuries. Hence there is no reason not to believe that this kind of clay modelling has been known in Kāśmīr already in the early centuries of the Christian era. If so, there is no ground to say that clay technique is adopted in Kāśmīr from the time of the Ushkar, as

i.e. the 11th of the *Khuddakavatthu* of the Pāli text, but our examination proved that the subject of embryology is not there, nor for that matter in any part of the *Khuddakavatthu*. We consulted the literature accessible to us to find out, whether the topic or the correspondence could be traced somewhere, but still our efforts remained fruitless. It is too much to expect from someone else to discover this for us from the Chinese and the Japanese sources.

For the tentative view expressed by the editor with regard to the date and place of the composition of the Sanskrit version, see ibid., Pt. 2, introduction, pp. xiii-xiv.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

Fabri argues, nor is there any scope for proposing intermediary terracotta stations, as Barrett does. Again the same reference lends support to our view that the figures coming from Ushkar, Akhnur, etc. had originally some kind of wooden armature inside; hence they are not terracottas. For the same reason it appears unlikely that the use of some kind of wooden armature in the clay images has been unknown in the Indian regions of Indo-Afghan school, although no archaeologist has reported it as yet.

The next source is the *Divyāvadāna*,[6] a Buddhist text composed in Sanskrit either in the 2nd or in the 3rd century A.D. One of the stories in this text is connected with an *Arhat*, in Mathurā, viz. Upagupta. This is a very long episode, but the relevant part of it runs as follows, when narrated briefly. Māra appeared once before Upagupta in the disguise of the Buddha, to deceive him. But in spite of his awareness of this trick the latter offered the worship to him, who wondered at it and asked Upagupta, why he was doing so. Upagupta replied him saying: "in spite of their awareness of the fact that the image is made of clay, people no more consider it to be clay, but worship it with the sense (or belief, "*saṃjñā*") of a godhead, so also I am worshipping you not as Māra, but in whose disguise you appeared, viz. the Buddha." This too undoubtedly indicates, if not proves, that the clay modelling of the kind, which is under discussion, was in vogue already in the 1st century A.D., if not earlier.

At the end of this topic it may be added that the literary sources discussed above indicate that it is not impossible that the fragments of clay figures discovered by Cunningham in the Apsidal temple at Sirkap were originally the examples of unbaked clay technique in spite of the fact that they were found in burnt condition which led him to consider them as terracottas, a view that was rightly refuted by Marshall. Thus the archaeological and literary evidences corroborate each other. The former provides us with extant specimens dating from the 1st century to the 8th century A.D. continuously. The latter, as far it is studied, throws more light on the issue. Accordingly, this technique can be traced back to the 1st century A.D. with certainty while it can be inferred to have been prevalent earlier, a century or so. When it is coupled with the modern practice as explained in the previous chapter, the same source indicates the continuity of this technique not only up to the 8th century A.D., as the archaeological evidence does, but also through all the centuries right up to our day. This is the case with the literature giving the information which can be characterized either of direct or of definite nature. By this we do not mean that the rest of it would be indefinite nature, for such questions could be decided only after a sufficient investigation. Hence

[6] *mṛṇmayeṣu pratikṛtiṣvamarāṇāṃ yathā janaḥ/*
mṛtasaṃjñāmanādṛtya namatyamarasaṃjñayā//

D.A., p. 228. The reading, *mṛtasaṃjñā* is obviously incorrect, for it must be *mṛtsaṃjñā*, though in this case the metre would go wrong, so some other reading must be found. It is out of question that the word, *mṛta* is used as an opposite to the word, *amara*. The context has nothing to do with the opposites, but the simile must be correct.

In order to make a different point, Coomaraswamy also has utilized this verse, see T.N.A., p. 157.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

for the time being it may be considered to be capable of providing only the clues for inference, and this point will further become clear, when the same topic is again undertaken for the discussion after a few pages. But it would be useful to recapitulate here the characteristic features of the technique traced from the *Āgama* texts, which may help to see the points in the comparative study that follows now.

The features that deserve special notice are: the metaphorical concept of the seven materials employed for the modelling of a clay image as the seven elements of a living body; the construction of a complex armature on the basis of the artist's anatomy expounded in terms of the *tāla* system of relative measurement; the use of coconut ropes for holding clay; the plentiful use of spices to prepare the clay; the employment of the *śarkarākalka*; the use of dried secretion of the tree, Feronia Elephantum (*kapitthaniryāsa*) as a binding medium in the colours, etc. These are unique to this tradition, and as such, they are characteristically suited to the Indian material and psychological conditions. Nevertheless, in the interest of history, one may ask the question whether this technique originated and further developed in India itself or was borrowed from somewhere else and adopted in such a way as to suit the Indian conditions best.

THE QUESTION OF FOREIGN INFLUENCE

Some kind of similarity in this or that respect may be noticed among the practices of various countries and peoples. Take for example, the application of the white as ground for painting colours on images,[7] it is so universal to base oneself on it to arrive at any conclusion, unless one is a dedicated adherent of the diffusionistic theory of art. Similar aspects, as this, may be accidental. One may take them as a starting point for the investigation, provided that there are some indications to justify it. But the simple or mere similarities lead us nowhere, and one should not, in fact, try to draw any conclusions on their basis. However,

[7] It is a well-known fact that many ancient Egyptian images of various media were polychromes, and it suffices here to refer to one instance, viz. certain wooden sculptures are stated to have been "covered with plaster" (i.e. white) "and painted" (A.A.E., p. 77).

A different instance may be cited now. A single well-shaped foot of copper, which was found at Tell Agrab, has led to some speculations, of which one is that the statue was of some other material with only the face, hands and feet cast in copper. Moreover, clay modelling played an important part in Mesopotamia (A.A.A.O., pp. 26, 28). But these need not be linked with the technique we have traced, simply because the clay played an important rôle in Mesopotamia as in India too and because the copper plates are prescribed for the feet and hands in the Indian technique. Firstly, the copper foot of Tell Agrab was a cast; secondly, with the image of which medium it was attached is unknown, and thirdly, the Mesopotamian clay images were executed with a different technical process and psychological background too, as the present writer came to the conclusion on the basis of his own repeated observation of the collection (which is in fact the most important one) preserved in the Pergamon Museum, Berlin.

If such cases, as cited above, can also come for consideration the following instance, though much later in time, cannot be neglected. Straw was also sometimes employed in Europe in order to obtain the bulk or core of the clay images (see L.N.D.M., Vol. II, p. 153; we are indebted to Dr. Mathias Winner, who kindly supplied this information).

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

on account of known historical connections between Gandhāran or Indo-Afghan schools on the one hand and the Graeco-Roman traditions and the Central Asian practice on the other, we should consider the possibility of the influences of these lands, for no other reason than that the earliest of the extant examples — as far as they are brought to light — belong to the Gandhāran and Indo-Afghan schools.

GRAECO-ROMAN TRADITIONS

If we come to the Graeco-Roman traditions, the question becomes complicated, and for the sake of clarity a very brief account of the conditions of these practices, as far as they are related to the medium of clay, may be given first. Throughout the ages clay has remained in these traditions as one of the important figural media. But that has been terracotta only.[8] The whole technique of terracotta differs from that of unbaked clay images on account of one single fact: that the former, as the word itself denotes, is fired in kiln. We need not, therefore, enter into these details.

So far as our information goes, no example of an unbaked clay image of considerable size has survived[9] for us from any site in the entire length and breadth of the vast areas where these traditions have spread and become a reality in their own right. But certainly it does not mean that the Greek tradition did not know of the unbaked clay technique. There are some literary evidences which clearly show that the Greeks used this technique not only for images, but also for the ornamentation of walls, especially of the temples. At times, for some reason or the other, they even made some limbs of an image with clay, while the others with different materials. The information of a general nature such as this, too, is available from the literary sources, but the real technical details of the clay modelling are not known from any source at all. Another historical point that must not be missed in this connection is that in Greece unbaked clay was in use in earlier periods, but later on it almost went out of fashion.[10]

When the question of small clay figures arises, it must be noted that they used to be

[8] In Greek art, in general, the potter's rôle was very important and the same might be true in the case of at least a great part of terracotta, too. It is perhaps for this reason that the writers on Greek terracotta often refer to Alexandre Brogniart's work, *Traité des Arts Céramiques*, (Paris, 1844), which is still considered to be one of the most authoritative works on the subject, though published a century ago.

[9] T.G.K.G.R., Vol. II, pp. 120, 122 and S.T.A., p. 20. Perhaps this is the reason for which the subject of unbaked clay modelling is rarely discussed in the literature on the Greek and Roman arts, whereas a vast literature on terracotta has been produced. Hugo Blümner, as his references to his predecessors make clear, was not the first to deal with the techniques, but he collected the material carefully and incorporated it in the big work referred to. Thus his work has become a classic. Apart from that, he has been a real source for subsequent writers like Walters, Deonna, etc. These remarks are meant neither to review the works in this field nor to evaluate them, but rather to justify our dependence on a book that was published seven to eight decades ago.

[10] T.G.K.G.R., Vol. II, p. 114. In this context Blümner says that clay modelling lived longer in Italy than in Greece, for Etruscans transmitted it. Even then this is not of too late a date.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

made for several purposes[11] throughout the ages. As a rule most of such figures used to be fired.[12] As has been pointed out, these are not of our interest. Some, however, used to be kept unbaked. Even these are not of use to us, because their technique was a simple one on account of their small size. One of the purposes of shaping small figures is to make the models, before executing big statues in materials like stone, etc. This practice came into prominence from the classical times onwards (i.e. from the fifth century B.C.). The models used to be made in two ways: First, different parts of the figure were made separately and then joined to the whole. The second, perhaps a more usual method, was to employ a wooden core onto which either clay or wax used to be pressed in which necessary details were slowly brought out. Some such figures seem to have been made with great care, especially in respect of polishing,[13] but these details are of little use in the present topic. As a matter of fact, if it were not for the employment of wooden base in one of these methods, these small figures need not on the whole be mentioned at all here. So let us turn to the details of the wooden base.

The Greeks called this wooden base Κα'νναβος (*kannabos*), or sometimes also with double 'n', i.e. Κα'ννναβος (*kannnabos*), which has, apart from the present one, different meanings in various contexts, such as a rough drawing showing the human figure in its broad muscular form, a lean person or a skeleton. According to some, this term should be distinguished from Κι'ννναβος (*kinnabos*), which meant "manikin", "lay figure", or else the model itself used by the artists as a small scale design which was to be enlarged.[14]

As to the shape of this Κα'ννναβος (*kannabos*), some speculation has been made. Two wooden sticks or rods used to be employed[15] to serve as supports for the two legs [but presumably these sticks ran through as far as the chest[16]]. The ground for this sort of speculation is an engraved gem. The subject engraved here is, it seems, an artist engaged in shaping a figure in which, in place of the legs, two sticks are seen. The Latin name for the Κα'ννναβος (*kannabos*) is *stipes* or *crux*. On this basis, it is conjectured that it was nothing but a cross made by way of fixing a wooden stick horizontally at the upper part of the chest to another

[11] T.G.K.G.R., Vol. II, pp. 122-24.

[12] ibid., p. 120.

[13] ibid., pp. 116-19.

[14] G.E.L., p. 874; T.G.K.G.R., Vol. II, p. 117, especially note 1, in which Blümner says that Müller identified them. Walters also emphasizes that both of these should be distinguished, see H.A.P., Vol. I, p. 92, for identical remarks, see also his C.T., Introduction, p. XXV. The above lexicon, however, also shows both these terms as synonyms, see p. 953.

[15] Deonna clearly expresses this view (see S.T.A., p. 17, note 1) and in this connection he quotes (apart from Blümner's work, Vol. II, p. 121) D.A.G.R., p. 1575, Fig. 2086 and A.G., Vol. I, Pl. XXI, Fig. 59 (but Fig. 61 of this plate may also be seen in this connection).

[16] The matter within the brackets is inferred by us on the basis of common sense.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

stick standing vertically, the former being a support for the arms.[17] According to one view, although the figures were made on the wooden base, it is not now seen in many extant examples, for such figures used to be fired after finishing the work.[18]

These are the technical details of unbaked clay modelling available so far. In the circumstances it is difficult to see any relation between the Greek and Roman practices, on the one hand, and the Indian tradition as traced from the ancient texts, on the other. Even if the question of the armature is taken, the Greek designation of the wooden base employed in model figures as Κα'νναβος (*kanabos*) might sound very significant at first, but this impression will change soon after its form is considered, as the Κα'νναβος (*kanabos*) is just a support of small figures, which in principle seems not to have differed from as late an example as of the Gothic period of the Christian art.[19] The fact that it is extremely simple in the conception itself is well proved by the use of the same term to mean also, according to expert opinion, the base for shaping the earthen pots.[20] There is no point, therefore, either in comparing it with the so very complicated armature of the Indian tradition or assuming it as predecessor of the latter. Even if the art of Gandhāran and Indo-Afghan schools is considered separately, the case is not different. Though our knowledge is still limited, there cannot be any doubt about it that in principle the Gandhāran or the Indo-Afghan way of constructing the armature is not quite different from that traced from the *Āgama* texts. Even if there is a difference, the Gandhāran or the Indo-Afghan method is far advanced to compare it or derive it from the Greek Κα'νναβος (*kanabos*) or Roman *crux* in whatever way it is interpreted. Nothing more is known from those traditions to be considered here. Even seen from purely historical point of view Gandhāra does not seem to owe to the Greek and Roman traditions *so far as the subject under discussion is concerned*, since the practice of making big images with unbaked clay technique went out of fashion in them long before the former was born and it would be fantastic to think that it is revived in Gandhāran or in Indo-Afghan school. If this is the case with Gandhāran or Indo-Afghan school, it is for the obvious reasons still less possible to find the Greek and Roman influence in the account of the technique traced from the *Āgama* texts.

Gandhāran or rather Indo-Afghan school shows its speciality even in the case of the

[17] H.A.P., Vol. I, p. 92 and C.T., Introduction, p. XXV; T.G.K.G.R., Vol. II, p. 117. Here Blümner also infers that the Κα'νναβος (*kanabos*) used to be complicated according to the posture of the figure, but he makes no suggestion as how it might have been complicated. We may not be wrong to assume that by complexity he means curves and so on, but not the problems of its construction.

[18] Deonna has expressed it unambiguously, see S.T.A., p. 17.

[19] G.H., pp. 8-10, see also Pl. 26. However ten years back it may be, when we wrote this note, it can be assumed that we have not made a great error. Nevertheless the confusion came to our mind somehow while reading the proofs, but for the want of necessary literature at the moment we were unable to verify it. If there were any confusion, that might be related to another book of the same author, dealing with the terracottas, the bibliographical details of which also we are unable to furnish, for the same unfortunate reasons.

[20] T.G.K.G.R., Vol. II, p. 42.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

technique viz. that of stucco, which is supposed to owe to the Greek and Roman traditions. In the latter also we find that the stone was cut into the rough shape of an image which served as a core and then some amount of stucco was applied over it in order to bring out all the features or details. This method was adopted especially when the quality of the stone was not good.[21] But it is not known if the clay ever had been employed over the stone core before the features were worked out in stucco, as was often the case in Indo-Afghan school. Nor is it known that the pure clay served as core in those traditions of art. If so, one must note that it is a special development in Gandhāra or in Indo-Afghan school, which is of considerable interest in our enquiry, for this is a pointer to the matter which we have already assumed, viz. the stucco comes to be used in the place of clay in Gandhāran and Indo-Afghan schools. This again indicates that the clay modelling as we have traced from the *Āgama* texts or as noticeable in the archaeological finds of Gandhāran and Indo-Afghan schools hardly owes anything to the Greek and Roman traditions. Thus we arrive at this conclusion, even when we strictly confine to the archaeological finds discovered up to now, but there are some more questions to be considered which we propose to discuss in the last section of this chapter. Accordingly, the practice of unbaked clay technique of this kind appears to have come into being in India several centuries earlier than the Gandhāra school itself, i.e. much earlier than the beginning of the Christian era.

THE RELATION BETWEEN THE INDIAN, CENTRAL ASIAN AND FAR EASTERN PRACTICES

Most of the material brought to light from numerous sites revealed the fact that clay has been the predominant figural medium in Central Asia throughout the period of its intense creative activity. This dominant position is often explained by material condition, that is, that either suitable stone or even lime was not available there in abundance; hence the artists were left with the only choice of clay. That may or may not be true, but, as such, it cannot establish that the technique of clay modelling of the sort in which we are interested now originated there. No example from Central Asia is known now which can be assigned a date as early as the 1st century A.D., whereas we know for certain that there was a practice of making unbaked clay images in India at that time. That is why we have already pointed out that the Gandhāran or Indo-Afghan practice need not be considered Central Asian *in origin*, when some scholars remarked that the technique of clay images of these schools is typical of Central Asia. In no way does our observation deny the possibility that in course of time some aspects of the technique may have been developed in Central Asia, and that the Gandhāran or Indian artists may have learnt this or that aspect from there.

Apart from this chronological point there is also another fact to be considered. The

[21] T.G.K.G.R., Vol. II, pp. 149-151.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

earliest known unbaked clay images of Central Asia are associated with Buddhism. These also perhaps indicate that the technique of unbaked clay modelling travelled to Central Asia along with Buddhism from India; this may not have been necessarily from Gandhāra alone. Several scholars have already suggested[22] it from this general view point, which can also be further substantiated with the very technical details, as can be studied from the images. Previous studies of the subject are unsatisfactory to give any references and the material is too vast to make anew a brief attempt here. For itself it deserves a special treatment and the present writer hopes to be able to do so in near future.

This technique did not confine itself to Central Asia alone and spread to the eastern-most part of the world, up to Japan — a fact which is in no way a startling discovery now, when spoken in general terms. However what is new is that we can see it now in a better way, for we are fortunate in having Moran's exceedingly valuable and instructive study[23] of the Japanese practice, valuable from the standpoint of not only the contents but also the manner in which the subject is treated. It would not be difficult for anyone to realize how similar in principle are the different aspects of the technique, after turning the previous pages of this work dealing with the Indian tradition and that of Moran's article devoted to the Japanese practice. Hence it is not necessary to raise any points here by way of comparison. Even if a comparative study is intended, it would not be possible to conduct it in a comprehensive manner, unless the Central Asian practice is fully treated. Although China is generally considered to be Japan's immediate source, one cannot see the reality excluding Central Asia. The Chinese practice, seen at least in its western frontier provinces, as Kansu, etc. hardly differs from that of Central Asia. In spite of certain development characteristic to China, it is in fact indebted in this, as in several respects, to Central Asia.[24]

[22] Foucher (M.A.S.I., No. 7, p. 22 and V.R.I.B.T., Vol. II, p. 345) and Le Coq (B.S.M., Pt. I, pp. 12-13) who even goes as far as to say that the technique became increasingly crude as it departed further and further from Gandhāra, which is debatable, though the latter's view need not be taken seriously, for he is one of those offering theories superficially. The following two writers indicate the same but with a confused use of stucco in place of clay: Rowland (A.A.I., pp. 105, 113-114) and Margaret Medley in a review (B.M., Vol. CII, No. 689, August 1960, p. 372), hence these two views may not touch the real point.

[23] A.A., Vol. XXIII, No. 1 (1960), pp. 41-66.

[24] O.C. Gangoly quotes (I.T.A., p. 9) the following passage from Leigh Ashton's book, 'An Introduction to the Study of Chinese Sculpture,' "(1924, p. 13)": *From the earliest times the Chinese have been accustomed to place in their graves objects of beauty and rarity to help the dead on his new journey of life. It is not till Chou times that this custom of interring valuables was entirely given up and substitutes of base material (e.g. clay) used instead. These substitutes, known as* ming-chi *were made in great quantities, and it is in this connection that human figures in straw and clay were first used. Confucius disapproved of the use of wooden and clay figures with joined limbs, as he considered them too human and the ceremony of their burial too much like immolation. For it must be remembered that till quite late in Chou times, people and animals were buried alive in the tombs of important people. Wu, prince of China, who died in 677 B.C. had sixty-six people buried with him. Confucius disapproved of this immolation, and it was perhaps as the result of his intervention that the custom of making pottery images become common.* As it is, this passage gives the impression that the practice of placing the figures made of straw and clay in the graves came into vogue in China at the time of Confucius, i.e. sometime in the 6th or the 5th century B.C. If so, this technique would be more or less the

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

However one guiding factor must be mentioned here. According to Moran, so far it is concerned with clay, the terracotta had been the usual technique in pre-Buddhist Japan and "the clay sculpture produced after the introduction of Buddhism was entirely unbaked,"[25] though after the Nara period other media dominated the scene. To see the historical link, the significant point to be noted is that the unbaked technique is connected with Buddhism, in the home-land of which terracotta is prohibited generally for the purpose of worship. Thus many items clearly indicate that the technique of unbaked clay modelling spread with Buddhism from India to all those parts of the world. This is a historical aspect, which is as such and in itself interesting. Nevertheless it should not be overemphasized, for in that case one causes the harm, though the enthusiasm for tracing influences seems to prevent the people from realizing this fact. The attempt to trace the origin and influences should serve a better appreciation of the influenced, but should not make one boastful. The present subject would teach us this in a better way, if we can see the variations in different areas, though the basic principles remain underlying. It is a wonder how clever the artists of various countries were to adjust themselves to the material conditions imposed on them and at last to master their craft, not craft but art. At the end it should be noted in the interests of future investigation that the assumption that the currents of arts connected with Buddhism travelled from Gandhāra to Central Asia, from there to China, then to Japan, etc., may be valid to a certain extent, but it should also be assumed that there were contacts without intermediaries, as some of the aspects of the technique might suggest. This point is raised here to draw attention of the scholars, but it requires intense study before it can be established on the basis of extant images of all these countries.

THE INDIGENOUS ORIGIN OF UNBAKED CLAY MODELLING

Thus we have tried to see if *similar* practice is to be found in the West and East with

same as the Tarimian (East Turkistan or rather Central Asia in general) methods, or at least similar to them. According to our knowledge, this seems very unlikely. Unfortunately we have not our notes at hand to give any reference or details, yet it may be mentioned that Berthold Lauffer dealt with the clay figures of the Chinese graves exhaustively, taking a huge amount of such examples into consideration (in a work published from Chicago, in the form of Annals or the like ?). They are very ancient too and at the same time it must also be noted that they are small measuring a few inches only to require any base of straw, etc. inside. In Lauffer's work there is no mention at all of any straw or straw core. True, the sepulchral figures made of clay on straw core or rather cores of reeds were unearthed from the Chinese graves in Astāna, near Turfan, but they are of very late date, viz. the 7th century A.D. and moreover, their technique is that of Central Asia in general (see *supra*, Ch. XIV, note 2). Since we were unable to see Ashton's book, it was not possible for us to find out whether Ashton himself clarified the questions elsewhere in the book or in the same context. Any way there are incorrect usages in it, for instance, *pottery images*, which is very peculiar. On account of dealing with this practice very briefly or in a sketchy manner in the passage quoted above, it seems probable that several stages of development got mixed up, and hence, the passage is creating the impression of one practice without any stages of development. In any case, the matter should be further investigated, as this has some historical significance, as far as the technique goes.

[25] A.A., Vol. XXIII, No. 1 (1960), p. 42.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

which India had contacts in its historical period, and we have noted that none existed in the West and there was one in the East, which, however, spread from India itself. This is rather supported by a religious prescription associated with two — baked and unbaked — techniques of clay. At least the Greeks seem to prohibit the use of stucco on grave monuments (*Grabdenkmäler*),[26] but we are not aware, if either they or the Romans had, likewise, any objection to the employment of terracotta for the purpose of worship. As has already been noted in the Introduction, the Indians, or at least the Hindus, prohibit terracotta images for worship in the temples, though the real ground for this act is not known. Nor does it seem possible now to infer. At this juncture this point may be further clarified. This prohibition was not directed against terracotta as a form of art. If that were the case, thousands of terracottas, even of the images of the Hindu gods of some considerable size, could not have been found, in the excavations or otherwise. At the same time it should be noted that there is no evidence establishing that they were being worshipped at any time. There is no prohibition against using terracotta objects, like lamps and *śarāvas* (shallow plates) at the time of worship. The terracotta images, for that matter, may be used for worship, but *only when the destructive results are aimed at*; the images of a few gods, viz. Gaṇeśa and Śāstā and goddess, Jyeṣṭhā make exception to this general rule (see Introduction, note 21). We came to learn from someone belonging to Uttarapradeśa that the terracotta image of Gaṇeśa is worshipped in that province once a year on a particular day. We cannot say how far this is authentic, but even if it is true, it comes within the exceptions that the texts make, for they say that the terracotta figures of Gaṇeśa could be worshipped as an alternative method, if so desired. In short, so far as the worship, or at least that connected with the temple is concerned, terracotta images of gods are considered to be inauspicious, and hence the prohibition.

As noted in chapter XIII, many figures supposed to be terracottas were unearthed from the Buddhist religious establishments. Even there are many Hindu temples, at least in certain parts, as in Bengal, etc., the outer walls of which are richly decorated with terracotta relief panels. Thus there is no difference between the Buddhists and the Hindus in point of employing terracotta for the purposes other than worship. It is not warranted to presume that the Indian Buddhist attitude towards terracotta was different from that of the Hindus. It is, then, to be concluded that the Indian attitude as a whole is not favourable towards terracotta images, if they are to be utilized for worship. This explains the inclination in India towards unbaked clay technique. This is most likely the main reason for which this technique survived through the centuries, a fact which we have not yet fully realized. Moreover, it is living in India till today. This strong inclination might have journeyed to other countries along with Buddhism and when we take this for granted, it would, then, explain the Japanese impulse to adopt unbaked technique in Nara period, when the introduction of Buddhism was

[26] T.G.K.G.R., Vol. II, p. 149.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

a recent matter, as against the previous habit of making terracottas. This is the first and the main point to be considered when the grounds for the inclination to the unbaked clay technique are to be searched. It is understandable even from the technical point of view. Images produced in the Buddhist monuments of either India or of other countries is, *generally speaking*, not small, and with the development of Mahāyāna the dimensions increase immensely. It is not easy to create big figures in terracotta for technical difficulties.

We have elsewhere concluded (*supra*, p. 223, note 1), on different grounds, that from time immemorial clay has been considered highly in India, and the metaphorical concept of the seven materials employed for modelling the clay image as the same number of elements of a living body is, in the nature of things, to be traced back to a remote age, as shall be further explained in the section that follows.

For all these reasons it can be concluded that the technique of clay modelling, which we have traced on the basis of the *Āgama* texts, originated in India itself. And, furthermore, no foreign influence can be assumed in its subsequent development, as far as essential aspects are concerned.

Previously we have noted two facts. First, the technique of clay modelling practised in Gandhāra and Indo-Afghan schools was not borrowed and, secondly, it is not *exactly* the same in all respects as the one that is traced from the ancient texts, though very akin to it. Can this mean that the textual account represents a later or further stage of development of the Gandhāran practice? It cannot be historically proved, as the latest known examples of the Indo-Afghan school are not earlier than the tradition that the *Āgama* texts record. First of all, the full account of the Gandhāran and Indo-Afghan practice is not yet available, to assess correctly to what extent these really differ from each other. The reader who has gone through the previous chapters, including the notes, might have noticed that the *Āgama* texts too are not unanimous on every point. Similarly, one who reads Moran's article realises at once that within the Nara period how different methods were adopted in Japan. The Central Asian practice is not different in this respect, i.e. the considerable variations are found there too. Whatever country or whatever period it may be, it is after all connected with the creative activity where the variation is a natural happening, for several reasons. If the Gandhāran and Indo-Afghan practice is different in certain respects from that traced from the *Āgama* texts, there is no wonder. The question is how far it differs. When seen in this way, the similarity that we have noted is enough to indicate that essentially it is the same, yet the difference may be provincial. Thus, the technique of unbaked clay modelling as discussed in the previous chapters on the basis of the ancient texts as well as the one that can be observed in the specimens from the Gandhāran and the Indo-Afghan schools besides those from Jammu and Kāśmīr, is Indian.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

ANTIQUITY OF THE TECHNIQUE OF UNBAKED CLAY MODELLING IN INDIA

Two questions automatically follow the above conclusion of the indigenous origin of the technique traced in the previous chapters. These are related to the place and the date of origin respectively, place, in the sense of precise locality, for after all India is a vast country, and the technique could not have started in the entire country at one time. Theoretically, it must have been confined at the beginning to a certain locality. However interesting and valuable this question may be, there is no scope now of ascertaining the precise locality of origin, and even it is too doubtful, if ever possible to do so.

Since the archaeological finds (actually made up to now) do not go beyond the 1st century A.D., one has to take recourse to the literary evidence to indicate the antiquity of the technique under discussion. The literature throwing light on the issue in a definite or direct way, has been already discussed, as far as we have been able to notice it, and at the same time it has also been hinted that there is another kind of literature which provides only the clues for inference. To this we shall turn now. It is an impossible task to arrange this type of literature into any categories. But some single words may be considered to form one of the categories, and such words may be discussed at first.

The etymology of the Sanskrit word *pusta*, the Pāli or Prākṛt form of which is *pottha*, is dubious, but the term is used in a number of senses. It is mentioned as one of the four varieties of *nepathya* (which means not only the make-up, but also many of the objects used on the stage) in the earliest extant treatise on dramatic art (the play-writing and play-production as well) of the 2nd century A.D., viz. the *Nāṭyaśāstra*.[27] It is the earliest work that the present writer can refer to, in which some details of the nature of *pusta* are available at a place. If the different matters stated therein are *generalized*, the *pusta* may be explained, in short, as anything that is 'made of thin material'; the thin material may imply not only the things like bamboo slits, hide, cloth, etc., but also coatings given with the substances, like lac, the paste of cooked rice, etc. The Sanskrit word for book, is *pustaka* and its distant derivative, *pūthī* in the modern northern Indian languages, irrespective of the question whether it is of birch bark or of palm leaves or of much lately introduced paper. And this confirms the above conclusion. If so, the Pāli *pottha*, as noted in the modern dictionaries (e.g. that of Rhys Davids') can mean, apart from other things, the clay image modelled by way of giving successive coatings, and hence, Geiger is correct in translating the same word as clay figure in the passage of *Mahāvaṃso* discussed already. Thus the term *pusta* at times means the clay figure modelled with the technique similar to that dealt with here.

Similarly, one finds both the words *lepya* and *lepa*, or either of them in any important

[27] N.Ś., Vol. III, pp. 109-10, also consult the relevant commentary.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

modern dictionary (such as that of Böthlingk and Williams, Edgerton's Buddhist Hybrid Sanskrit Dictionary, and even Rhys Davids' Pāli Dictionary, etc.). Among the other meanings "plaster" is noted under the word *lepa*. The works in which compilers of different dictionaries have found this word in the above sense are undoubtedly much later than the verb *lip*, which, generally speaking, means "to coat". It goes without saying, then, that the word *lepa* originally meant just "coating" and later came to mean the material with which a coating is given. Colours can also be coated, so again we are to understand that it was used in the secondary sense only in a restricted field, viz. the plaster, either of mud or stucco, irrespective, of course, of whether it is coated to cover the wall surfaces or to model an image. If we come to the word *lepya*, we find that "statue" or "image" is noted as one of its many meanings. Etymologically the word *lepya* is to be formed directly out of the verb *lip*. So *lepya* is supposed to mean the image made by way of coating, or in layers. On the basis of the meaning of *lepa* that has been noted above, we are to assume that *lepya* means an image made of either clay or stucco by way of coating, or in layers.

Some scholars have discussed the meaning of the word *lepya*. Dealing with the early phases of Indian art in historical times, Nihar Ranjan Ray explains the term *lepyacitra* to be "continuous narratives in line and colours on textiles" and adds that they "parttook of the nature of *paṭacitras* of later tradition".[28] Since he does not give any reference, except to state[29] that this term was used in early Buddhist literature, it is difficult to know whether he gives this meaning from his impression, which he does habitually, or whether there is sufficient evidence at all for it. Any way this meaning appears very strange. As for its compound form (from the words *lepya* and *citra*) the term is very interesting. If the word *citra* here has anything to do with mere painting, why is it compounded with *lepya*? No explanation can be given here. We have concluded elsewhere[30] that *citra* was current in the sense of a polychromatic image in early ages. *Lepya* can fit very well with this, for both together can mean a painted clay image (or else a painted stucco). But it should be examined now whether the context in which this term, namely *lepyacitra*, is found would allow us to give such a meaning or not.

In connection with the classification of the images on the basis of the material employed for making them, the word *lepya* was used also in *Śukranītisāra*, and Binoy Kumar Sarkar translates it as enamels,[31] which is incorrect, because such a meaning does not suit the context. Ananda K. Coomaraswamy, on the other hand, translates the same as stucco.[32] While doing so, he seems to have taken as his basis the similar usages from which the compilers of dictio-

[28] A.I.U., p. 528.

[29] ibid., p. 531.

[30] See Section IV of our article *The Rôle of Polychromy in Indian Statuary*, A.A., Vol. XXIV, No. 2, pp. 125-28 and also another article of ours *The Art Medium of Śaubhika-s and Its Nature*, As.S., Vol. XV, Nos. 3-4, pp. 100-104.

[31] Ś.N.S. (Eng.), Ch. IV, Section 4, pp. 167-8, verses 147-51.

[32] T.N.A., p. 113.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

naries have noted the meaning "plaster". J. N. Banerjea translates *lepaja* (i.e. *lepya*) as the image "made of clay."[33]

Seen purely etymologically, the word *lepya* (that which is to be made by way of coating, or in layers) refers to the process by which a certain object is accomplished. In that case, painting can also be called *lepya*. In fact this word was used in some texts, as Banerjea informs us, in the sense of painting (according to Benerjea "frescoes").[34] It is now clear that this word has a complex history. It is our impression that for some reason or other it came to mean painting, etc. in later periods only, but that in early periods it meant an image made of either clay or stucco. This means that it referred not only to the process but also to the material in which an image was to be made. To settle the question and also to follow the history, one has to find out the earliest usages of this word and see what it meant there. Again it is merely our impression that it meant, in its earliest usages, only the image made of clay.

The most interesting fact is that Śrīkumāra, the author of *Śilparatna*, names[35] the clay image (modelled by the technique explained in the previous chapters) as *lepyabimba*. But this term is not used in any of our source books, including the *Kāśyapaśilpa*, from which he literally borrows the part dealing with clay modelling. This fact does not minimise the significance of his use of the term; on the contrary, it deserves special consideration. Some modern writers have considered Śrīkumāra as though he were an original author, which is far from the truth. Yet one would certainly be wrong if one were to reckon him among those compilers who pick up subjects from each and every source. He seems, in the first place, to be a person of perfect understanding. Hence, he borrows different subjects from those sources in which they are treated in the best possibly way. Here, in his way of selection, lies his worth. So we are to assume that he borrows this term from some early source, after careful consideration. On his authority we can take it for granted that the clay image built in layers is at least one among many meanings that the term *lepyacitra* denotes. For this reason we were[36] strongly tempted to add this term even to the title of this book, but on second thoughts we have abandoned this idea for the present, in view of its complex history which is not yet fully clear.

Thus, although the term *pusta* is of a general nature meaning different objects made of various materials, it gives a clue to the inference and further investigation, because one of the meanings of it is also a clay figure built by way of applying the said medium in thin

[33] D.H.I., pp. 208-9.

[34] ibid., p. 222. From the verses quoted here by Banerjea it appears that there is a scope for a different interpretation, though one cannot be sure about it until the verses are studied in the context in the original source.

[35] Ś.R., p. 83.

[36] On the basis of Śrīkumāra's use, we have, in fact utilised this term (see "Indologen-Tagung 1959", edited by Ernst Waldschmidt, Göttingen, 218 ff.), though with a modification, viz. *lepyacitra*, instead of *lepyabimba*. The reason for this modification is an ancient use (discussed in the articles referred to in note 30 of this Ch.) of the word *citra* in the sense of a polychromatic, three dimensional image.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

coatings. It is, therefore, possible that the clay image of the kind which is of our interest, used to be referred to in early literature or at least in certain branches or places of it. The word *lepyacitra* or *lepyabimba* or even single *lepya* is of more definite nature, for it means, according to its earlier denotation, only two kinds of images, viz. of clay and stucco, and the further interest or value of this term is that it implies also the process in which the medium is applied, namely, in layers or coatings. According to our present knowledge the practice of making images with stucco begins in the 1st century A.D., though the stucco (*sudhā*) as a material has been known much earlier, for which there is sufficient evidence. But in all likelihood the word *lepya* has been in vogue as a technical term previous to the 1st century A.D. It suggests then, that this term is originally, as far as art goes, meant only the clay figure modelled in layers. These two terms, especially the latter, are definite clues to further investigation.

Apart from those directly implying the meaning of clay image, the other terms also can give some clues. As long as one is not confronted with a problem or engaged with an issue seriously, it does not always strike how much meaning the different usages are invested with, even when one comes across such usages. This detailed study of the technique from the *Āgama* texts brings a considerable number of technical terms to light and poses certain new questions. In other words it makes us aware of the problems. Let us take *śarkarā* as an example. For a long time it has been known that the lime-stones are called by this name in Sanskrit, especially in the treatises on art. However, no attempt yet has been made to investigate what those texts say about the methods of obtaining the lime out of the *śarkarās* and further process of making stucco out of it. Nor has there been any attempt to trace the historical aspects of the use of stucco, except to be complacent with the Gandhāran discoveries and with the conclusions drawn on their basis. Lime is often mentioned to have been used by the Megalithic and Chalcolithic cultures in India,[37] but the present writer is not aware of any work throwing light on the nature and the technical aspect of this material. True, the word *śarkarā* is often met with in the early literature in other senses than the lime stone. Nevertheless there are grounds to believe that in early texts also it has been used in this sense. There is also some misunderstanding about it,[38] though we have not yet investigated the question in detail. Even if some misunderstanding took place, there would be no wonder, for in course of time, i.e. by the time when the people have lately begun to write commentaries, the technical shade of meaning might have been forgotten to some extent, and in that case it is too natural that the commentators would try to manage purely philologically. It is precisely in this respect that the need is great to restore the original technical meanings by applying historical methods. Thus there is, therefore, much to be investigated by going through a vast literature

[37] For example, A.I., No. IV (1947-48), pp. 192, 196, etc.; No. XIII (1957), p. 27; I.A. (1954-55), p. 7.

[38] In K.Ś.S. an aphorism runs: *śarkarā anagnicitaḥ*, 21.4.11. Unless a close study is made, it is difficult to state what is precisely meant by it. In the commentary, *Devayājñikapaddhati*, the word *śarkarā* is not explained at all and, even what has been stated with regard to the rest, does not seem correct (see p. 703). Karka, in his commentary, explains *śarkarā* to be brick, *iṣṭakā* (vide Vol. II, p. 260), which is too questionable.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

—not only the Vedic and the Buddhist but also the Jaina literature in three different languages, Sanskrit, Pāli and Prākṛt. The proof of this statement, can be Śaṅkarācārya's implied reference to the clay figure, as discussed at the end of the previous chapter (see especially note 16, Para. 2). Thus several individual words and certain techniques associated with their meaning may throw some light on the historical aspects. Besides these, there is also the other source, viz. the literary passages connected with the concepts of certain things, which we shall discuss briefly.

Explaining the word *hṛdaya* used in a passage of the *Bṛhadāraṇyakopaniṣad*[39] Śaṅkara as well as Nityānanda in their respective commentaries say that it is a group of muscles (*māṃsapiṇḍa*) in the shape of lotus between the stomach and the chest. Similarly, Śaṅkara and Upaniṣadbrahmayogin explain the same word in their respective commentaries on *Praśnopaniṣad*[40] exactly in the same way. Nityānanda explains the flow and the situation of the *nāḍīs* in the body similar to the veins of the dried *pipal* leaf,[41] and this is the very simile that has been employed to describe the flow and the situation of the ropes tied on the armature (*supra* p. 85, Para. 2). As can be supposed, they do so according to the *Upaniṣadic* tradition, but not basing themselves on the later Tantrism. Our source books, viz. the *Āgamas* prescribe to form a lotus at the chest with the ropes (*supra* p. 85, Para. 3), so it is obvious that they too do so on the very basis of the *Upaniṣadic* tradition. This may indicate that we are to look for the origin of the clay modelling of the kind under discussion some time in the 1st millennium B.C.

Several accounts of anatomical material are found in the *Upaniṣadic* as well as the Buddhist Pāli literatures, almost all of which belong to the pre-Christian age, and some of these are discussed in the Excursus Two in some detail, and only a few bare points are touched here. Some of them are meant to enlist important substances that the human bodies contain and others are related to the major elements with which the body is built up. This is the latter category which is revealing. And some of these mention only five elements, others six and a few seven. Whatever may be their number, they are often mentioned in the order that starts from the surface and goes to the innermost substance. This means that they are arranged according to the order that the common purpose suggests. Thus, as far as the order of arrangement is concerned, it is reversal to that adopted in the case of the clay technique, in which the counting proceeds from within to without. This is clearly guided by the practical need, as the modelling develops in that order. In spite of this difference of their number and the order of arrangement, all these accounts give us insight into the kind of ideas that worked behind the development of a particular technique of unbaked clay modelling. The meaning they convey to us, however, varies from case to case. In respect of suggesting the relation in

[39] Br.Up., 2.1.19.

[40] P.Up., 3.6.

[41] Br.Up., 2.1.19 (p. 76).

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

coatings. It is, therefore, possible that the clay image of the kind which is of our interest, used to be referred to in early literature or at least in certain branches or places of it. The word *lepyacitra* or *lepyabimba* or even single *lepya* is of more definite nature, for it means, according to its earlier denotation, only two kinds of images, viz. of clay and stucco, and the further interest or value of this term is that it implies also the process in which the medium is applied, namely, in layers or coatings. According to our present knowledge the practice of making images with stucco begins in the 1st century A.D., though the stucco (*sudhā*) as a material has been known much earlier, for which there is sufficient evidence. But in all likelihood the word *lepya* has been in vogue as a technical term previous to the 1st century A.D. It suggests then, that this term is originally, as far as art goes, meant only the clay figure modelled in layers. These two terms, especially the latter, are definite clues to further investigation.

Apart from those directly implying the meaning of clay image, the other terms also can give some clues. As long as one is not confronted with a problem or engaged with an issue seriously, it does not always strike how much meaning the different usages are invested with, even when one comes across such usages. This detailed study of the technique from the *Āgama* texts brings a considerable number of technical terms to light and poses certain new questions. In other words it makes us aware of the problems. Let us take *śarkarā* as an example. For a long time it has been known that the lime-stones are called by this name in Sanskrit, especially in the treatises on art. However, no attempt yet has been made to investigate what those texts say about the methods of obtaining the lime out of the *śarkarās* and further process of making stucco out of it. Nor has there been any attempt to trace the historical aspects of the use of stucco, except to be complacent with the Gandhāran discoveries and with the conclusions drawn on their basis. Lime is often mentioned to have been used by the Megalithic and Chalcolithic cultures in India,[37] but the present writer is not aware of any work throwing light on the nature and the technical aspect of this material. True, the word *śarkarā* is often met with in the early literature in other senses than the lime stone. Nevertheless there are grounds to believe that in early texts also it has been used in this sense. There is also some misunderstanding about it,[38] though we have not yet investigated the question in detail. Even if some misunderstanding took place, there would be no wonder, for in course of time, i.e. by the time when the people have lately begun to write commentaries, the technical shade of meaning might have been forgotten to some extent, and in that case it is too natural that the commentators would try to manage purely philologically. It is precisely in this respect that the need is great to restore the original technical meanings by applying historical methods. Thus there is, therefore, much to be investigated by going through a vast literature

[37] For example, A.I., No. IV (1947-48), pp. 192, 196, etc.; No. XIII (1957), p. 27; I.A. (1954-55), p. 7.

[38] In K.Ś.S. an aphorism runs: *śarkarā anagnicitaḥ*, 21.4.11. Unless a close study is made, it is difficult to state what is precisely meant by it. In the commentary, *Devayājñikapaddhati*, the word *śarkarā* is not explained at all and, even what has been stated with regard to the rest, does not seem correct (see p. 703). Karka, in his commentary, explains *śarkarā* to be brick, *iṣṭakā* (vide Vol. II, p. 260), which is too questionable.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

—not only the Vedic and the Buddhist but also the Jaina literature in three different languages, Sanskrit, Pāli and Prākṛt. The proof of this statement, can be Śaṅkarācārya's implied reference to the clay figure, as discussed at the end of the previous chapter (see especially note 16, Para. 2). Thus several individual words and certain techniques associated with their meaning may throw some light on the historical aspects. Besides these, there is also the other source, viz. the literary passages connected with the concepts of certain things, which we shall discuss briefly.

Explaining the word *hṛdaya* used in a passage of the *Bṛhadāraṇyakopaniṣad*[39] Śaṅkara as well as Nityānanda in their respective commentaries say that it is a group of muscles (*māṃsapiṇḍa*) in the shape of lotus between the stomach and the chest. Similarly, Śaṅkara and Upaniṣadbrahmayogin explain the same word in their respective commentaries on *Praśnopaniṣad*[40] exactly in the same way. Nityānanda explains the flow and the situation of the *nāḍīs* in the body similar to the veins of the dried *pipal* leaf,[41] and this is the very simile that has been employed to describe the flow and the situation of the ropes tied on the armature (*supra* p. 85, Para. 2). As can be supposed, they do so according to the *Upaniṣadic* tradition, but not basing themselves on the later Tantrism. Our source books, viz. the *Āgamas* prescribe to form a lotus at the chest with the ropes (*supra* p. 85, Para. 3), so it is obvious that they too do so on the very basis of the *Upaniṣadic* tradition. This may indicate that we are to look for the origin of the clay modelling of the kind under discussion some time in the 1st millennium B.C.

Several accounts of anatomical material are found in the *Upaniṣadic* as well as the Buddhist Pāli literatures, almost all of which belong to the pre-Christian age, and some of these are discussed in the Excursus Two in some detail, and only a few bare points are touched here. Some of them are meant to enlist important substances that the human bodies contain and others are related to the major elements with which the body is built up. This is the latter category which is revealing. And some of these mention only five elements, others six and a few seven. Whatever may be their number, they are often mentioned in the order that starts from the surface and goes to the innermost substance. This means that they are arranged according to the order that the common purpose suggests. Thus, as far as the order of arrangement is concerned, it is reversal to that adopted in the case of the clay technique, in which the counting proceeds from within to without. This is clearly guided by the practical need, as the modelling develops in that order. In spite of this difference of their number and the order of arrangement, all these accounts give us insight into the kind of ideas that worked behind the development of a particular technique of unbaked clay modelling. The meaning they convey to us, however, varies from case to case. In respect of suggesting the relation in

[39] Br.Up., 2.1.19.
[40] P.Up., 3.6.
[41] Br.Up., 2.1.19 (p. 76).

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

which these elements remain, the *Manusaṃhitā* account is important. The account found in the *chavi sutta of Suttapiṭaka* is highly valuable, for the *chavi* means pigmentary skin corresponding to the colour of the account of clay modelling. The most important of all these is the account found in one of the earliest *Upaniṣads*, viz. *Bṛhadāraṇyakopaniṣad* assignable to the 8th century B.C. This is because of the fact that a comparison is made in this account between the elements of the human body and those of a tree as was done in the case of the clay modelling between the human body and clay figure, and their number too, being seven in both the cases, tallies. As stated, the order of arrangement of the elements is different, and it may be helpful to realize the closeness of these concepts at a glance, if these two accounts are arranged in a tabular form, changing the order of the seven materials of the clay image according to the order of the *Bṛhadāraṇyakopaniṣad*.

Account of Br. Up.		Account of Clay Modelling	
TREE	HUMAN BODY	HUMAN BODY	CLAY IMAGE
1. *Parṇa* leaf	*Loma* hair	*Jīva* life	*Varṇa* colour
2. *Utpāṭikā* bark	*Tvak* skin	*Tvak* skin	*Paṭa* cloth
3. *Rasa* sap	*Rudhira* (= *Śoṇita*) blood	*Śoṇita*(= *Rudhira*) blood	*Śarkarākalka* lime-stone-paste
4. *Śakara* sap-wood (alburnum)	*Māṃsa* flesh	*Māṃsa* flesh	*Mṛt* clay
5. *Kināṭa* cambium (not cork-cambium)	*Snāvan* sinew (fibrous material)	*Nāḍī* veins, etc. (fibrous material)	*Rajju* ropes
6. *Dāru* heart-wood (duramen)	*Asthi* bone	*Asthi* bone	*Śūla* wooden pieces (or rods)
7. *Majjā* resin or gum	*Majjā* marrow	*Medas* fat	*Aṣṭabandha* varnish

The item 7 of the clay modelling as arranged here, viz. the *medas* or fat should precede the 6th item, *asthi* or bone according to its original order. It has been already pointed out in chapter I that only for practical purpose (namely, the varnish is to be applied on the wood) this place has been assigned to it, although it was known to the ancient modellers from the *Āyurveda*

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

that the fat lies on the flesh. We are to understand it in the similar way, if it does not tally, in its stage, with the *majjā* of the *Bṛhadāraṇyakopaniṣadic* account; but it corresponds by its nature, i.e. as a viscid substance. There is some difference also in the case of the first item, although in this case there is no change of its stage or position. The leaves are more striking in the case of a tree, hence the hair of the body was to be taken as its corresponding element. The colour and life do not correspond in nature, yet both are equalled, as explained in chapter I, on the ground that the colour has the same effect in the image, as does the life in a living body, viz. it makes the image act or effective, as does the life in the body. These two variations are guided by the practical reasons, and yet even a single glance at the above table at once reveals that the underlying idea is the same. This similitude clearly indicates that the origin of the unbaked clay modelling traced on the basis of the *Āgama* texts must be looked for in B.C., and the date of its origin possibly can go back as early as the 8th-9th centuries B.C. Why not still to the earlier period? Such is merely a theoretical question. On the contrary, the date suggested is an inference based on a good ground.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

Excursus One

THE GANDHARAN AND INDO-AFGHAN TREATMENT OF DRAPERY IN RELATION TO THE EARLY AND CONTEMPORARY SCHOOLS IN THE REST OF INDIA

Much has been said and written about the Graeco-Roman contribution to many aspects of the Gandhāran and Indo-Afghan schools. Among such aspects the treatment of drapery is again considered as one of the major items. It is also assumed that through these schools the same traditions have contributed to the rest of Indian schools to a limited extent, viz. a particular way of treating monastic robes of the images of either the Buddha or of the monks of this fold. As a matter of fact, the treatment of drapery in Indian art — irrespective of the periods and schools, including those two mentioned above — shows a number of variations. Yet there has been no attempt to clarify or to codify them for a convenient understanding and also to see whether some of these variants would give a key to fix the chronology, better to say, the sequence, although there is much less hope in the latter direction on account of the repetition of more or less the same variants in course of centuries, at times even with intervals, and in places lying far away from one another geographically. It is a too complicated subject in itself to investigate easily, and it is also not the place to go into the details of its complexity. A few aspects of it may be touched here in a general way. It is fruitful to note at first the general trends of the Graeco-Roman traditions on the one hand and of the Indian tradition on the other.

It is said that there were differences in the treatment of the folds of drapery in the Greek and Roman traditions, the details of which need not be touched here. Yet it is true, and also, it suffices to note in this context that they were often executed in both the traditions to have their own volume, as in the nature, although somewhat stylized or at times schematized. This has never been, however, the case in India. This applies even to the Gandhāran and Indo-Afghan schools of art, where those traditions have exerted a considerable influence. In the case of these schools, however, there are several aspects to be taken note of, for they do not adhere strictly to the trend of treating it naturalistically, and to which we turn later on. True, the Greeks also had no taboo to execute the images in complete nudity, but they have produced either complete nude figures or fully draped images. Obviously in India too there have been no injunctions — religious or otherwise — against the nude figures or nudity, as is proved by several examples, in particular by the representations of the Mahāvīra, which incident is more important, as the Jainism[1] is highly ascetic in its practices. It is a speciality

[1] As a counter part to the Sanskrit compound, *Jainadharma* or *Jainamata*, the word, Jainism could go and it need not necessarily be Jinism.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

of Indian art or the arts of some other lands related to it that fully draped images are treated as if they are nudes. They are nudes, not necessarily in the sense that the genital organs are portrayed, though that mode is also to be found, as in *Yakṣīs* of early Buddhist art and the like in spite of their wearing the garments. Hence it is unnecessary to use the phrase: half nude, keeping the fact in view that most of the female figures are fashioned with the breasts exposed and most of the male members are executed with bare trunks, although it has been the social custom in all the relevant centuries to cover the female chest with some kind of clothings — stitched or otherwise. Whether a figure is nude or draped or half draped, has really a little relevance in the context of Indian art for the following general trend, which is one of the most important aspects of this art. The complete body with each part well-articulated and the total lineal beauty of the posture should be visible at once, that too, without any obstruction, in its purity, in convex volume with evenly interlocked planes. The spectator perceives the form not as suggested by a middle agent, like the drapery, but he is in visually direct contact with the object of his contemplation — contemplation not necessarily of a religious type. Here there is no *Pūjāri*, priest. Drapery is present as a mere representative of a social custom as such, but remains reduced to the minimum, serving as a subordinate — like the ornaments, another symbol of mastery of bygone days. This reduction should not be attributed to the thinness of cloth, though in some cases, as in early Bodhisattva or in some *Yakṣa* figures that quality is perceptible, for many of the figures appear to wear a thick cloth. Also the lappets are executed; they remain either at the sides or in the empty region in between the legs, that too not with the natural dimensions, but in the form of the masses barely required as sculpturally balancing elements. This is mostly on such masses the folds are executed suggestively, by adopting certain devices. Even when they are indicated otherwise, i.e. suggesting the volume, they are to be seen in profile[2] but not in the forthcoming form. If the folds are at times wrought also on the bodies proper, the methods do not differ.

It is, therefore, worthwhile to discuss some of these modes with reference to the examples earlier than Gandhāran art and also to the contemporary specimens, on which no Gandhāran influence could be traced as far as the drapery is concerned. (For the chronological reasons, we thought it not necessary to repeat always the Indo-Afghan school in this context.) This account is necessary to observe the Gandhāran trends in proper context. In order to avoid the repetition of the phrases, they are explained giving a number to each of them. But it should be noted that the numbers, either in ascending or in descending order, do not suggest the frequency or anything of the sort, and thus it is a mere convenient enumeration. Similarly, it is neither assumed that these alone are the modes to be seen (because a minute study may reveal additional ones also), nor does it imply that these could always be distinctly obser-

[2] What we mean by profile form of the folds is the same as they are found at the sides of the central lappet in some figures, as a *Yakṣī* (*Culakoka Devatā*) from Bhārhut (A.A.I., Pl. 14a or H.I.I.A., Pl. XI, Fig. 39) or that from Besnagar (ibid., Pl. III, Fig. 8).

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

vable without any admixture. Hence these are proposed as broad trends, which give some insight into the treatment of drapery in general terms.

MODE 1:
Simple incised lines looking as if engraved on a metal object at close intervals, for instance, Besnagar *Yakṣī* (central lappet), Pārkham *Yakṣa* (lappet beside the left leg), several images from Bhārhut, like *Culakoka Devatā* (central lappet), etc.[3]

MODE 1a:
The same as above, but the lines are incised at some distance, e.g. Besnagar *Yakṣī* (left thigh), Kubera from Bhārhut (shawl), Indra from Buddhagayā (right thigh), etc.[4]

MODE 2:
The lines are cut a little deep at some distance and the resultant sharp edges on both sides are blunted, giving slightly rounder look to the intervening spaces, as in Friar Bala Bodhisattva, i.e. Buddha in this case (left shoulder) and a standing Buddha from Mathurā (left shoulder; showing the same quality but in a less degree), etc.[5] The surface from which the work starts is even.

MODE 2a:
Basically this is the same as above, with the difference that at the centre of the intervening spaces a thin line is incised, which feature is to be found in a few examples, such as the seated Buddha from Katrā and another from Mathurā (now in Boston).[6] Here too the level from which the work proceeds, is even.

MODE 3:
Here the lines are effected at a distance and only the lower edge of the resultant spaces in between any two lines, is gradually flattened beginning from a little upper point and, in depth, almost up to the bottom of the incised lines (this is not the case of simple blunting, as it is in the above modes). This relieves the edge of the next zone lying immediately on the other side of the line. On account of this a slight graded effect results in, as may be noted in some Amarāvatī Buddha figures or in those from Nāgārjunakoṇḍa.[7] Obviously, in this case also the work starts from a levelled surface.

MODE 4:
In this case two parallel lines are incised close by and the outer edges of both the lines, in other words the edges of resulting wider zones, are either simply blunted or

[3] See H.I.I.A., Figs. 8, 9 (Pl. III) and 39 (Pl. XI) for the respective examples in the same order.
[4] H.I.I.A., Figs. 8 (Pl. III), 38 and 40 (Pl. XI).
[5] See H.I.I.A., Fig. 83 (Pl. XXII) and G.S., Pl. 139 for the respective figures.
[6] H.I.I.A., Figs. 84 and 85 (Pl. XXIII).
[7] H.I.I.A., Fig. 139, 141 (Pl. XXXIII from Amarāvatī) and A.A.I., Pl. 71A (from Nāgārjunakoṇḍa).

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

gradually flattened beginning from a little distance and, in the depth, almost up to the bottom of the incised lines. The result of it, is the string-like thin raised ridges, as in Paṭnā *Yakṣa* (Indian Museum, Calcutta), another *Yakṣa* from the same place (Paṭnā Museum), Dīdargaṃj *Yakṣī* (Paṭnā Museum), etc.[8] That the ridges are cut in the way explained here would be clear, if studied a little closely, and as a matter of fact it is also evidenced by some Indian ivories found at Begram.[9] Needless to say that in the examples referred to, this work starts from an evened surface, and the raised ridges as well as the wider zones between them remain on one level till the end, except both the edges of the latter. Even if any difference is made, that is almost nominal. Supposing that the two lines are not cut, and one edge of the wider zone is gradually flattened, one can at once see that it would be the same as the mode 3. Hence it appears probable that the mode 3 is a development from this mode.

These are the trends to be noticed in different Indian schools, when the entire development that took place up to the 2nd century A.D., is looked at in broader terms. It may, however, also be seen that instead of thin lines a bit wide grooves are effected at some intervals, as in the Buddha images from Fondukistan.[10] This is similar to mode 1a, but in spite of that, it may be, if so desired, considered to be a separate mode. In any case we did not include it here, for it is apparantly a later development (at least we do not remember any example of it, which is contemporary to any of the figures referred to in the course of above discussion).

There are some points relating to the modes discussed above, which must be noted at this juncture. First, it is not that always one of these modes was adopted and, in fact that was rather rare. On the contrary, several of these modes were employed often in a given figure, examples of this are those already referred to. This was the tendency in early periods, especially with which we are concerned, although in later ages this situation has somewhat changed.

Secondly, whatever may be the aesthetic or other effects of these modes, they are all basically technical, and are discernible, when looked at from the standpoint of the technical procedure, in other words, the procedure that sculptors adopted in their work. As already pointed out, they start all alike from a levelled up surface, which means from a finished surface, but

[8] For *Yakṣa* of Indian Museum, see A.A.I., Pl. 13 while for the other (Paṭnā Museum), vide H.I.I.A., Fig. 67 (Pl. XVIII) and *Yakṣī* is reproduced in the both, in Pl. 24 and as Fig. 17 (Pl. V) respectively.

[9] G.S., Pl. 28, see the parallel lines on the lower garment of the seated lady. These need not be considered to be the coloured strips of the cloth itself, as in several painted figures of Ajantā, for there are other ivory examples, for instance, ibid., Pl. 29 and 49, the latter being still clearer. The difference between the work in the *Yakṣas* and *Yakṣīs* on the one hand and in these ivories on the other, is that in the latter the edges of the wider middle zones are not blunted, that may be on account of the material. Whether the *Yakṣas* and the ivories are contemporary or not, is immaterial here, as the same trend can continue for centuries and, moreover, these ivories are referred to here as an example of that sort of work.

[10] G.S., Pls. XVI (coloured) and 175.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

they are not fashioned out of natural or rough surface of the mass or material, i.e. in these cases the stone. This accords with the Indian sculptor's general predilection to conceive the human form in its purity, as an object of aesthetic values, and hence to keep the other paraphernalia in a strict subordinate position to it. Exceptions to this rule are very few, like Amarāvatī Buddhas.[11] It is in this way that the total size of the drapery is at first worked out in its thin and plain form, as it does not hide the human body, the chief interest, and then the bare details of the former were brought out. Thus this is a work completed in two stages.

Thirdly, whatever be their thinness may, the incised lines in the first three modes, represent the darker or the concave parts of the garments, in other words, the zones between the lines stand for the convex folds or sometimes even creases. This is generally true, although from some cases — such as Kaniṣka's standing figure (or, rather speaking precisely, on the long coat and especially on the inner garment of this figure) from Mathurā or even perhaps also a standing Buddha (accross the thighs) from the same place[12] — one gains the impression whether these lines themselves do not stand for the folds; this being more so in the case of Kaniṣka's statue, as these lines are calligraphic or even painterly.

Fourthly, in the case of string-like raised ridges the question should be posed whether these ridges themselves represent the convex folds or concave parts of the drapery. In fact this question arises particularly in view of the mode 1a, in which the incised lines stand for the darker parts of the drapery, i.e. wider zones between them represent the convex folds. On the analogy of this the wider spaces in the present case also (mode 4) should represent the convex folds of the drapery. But this is not the case. If that were so, where is the scope for raised ridges in the darker areas of the drapery? Hence it is self-evident that these string-like ridges themselves represent the projecting and convex folds. If the middle zones appear slightly convex on account of blunting the edges that does not change the situation and, moreover, that is a mere technical expedient to relieve the ridges. Above all, this situation has begun to change in course of time, by the second century A.D. as is seen in Amarāvatī Buddhas and the like;[13] now these zones have been deepened throughout and almost evenly in some cases at least, although the older method too persists side by side for some time, which later on completely ceases to be. That the raised ridges, thus, represent nothing else than the projecting convex folds of the drapery, is beyond doubt, although at the rare occa-

[11] The treatment of the drapery in Amarāvatī Buddhas (H.I.I.A., Pl. XXXIII, Figs. 138, 139, etc.) and even those inspired by them, for example the one from Anūrādhapura, Ceylon (ibid., Pl. XCVII, Fig. 293) and a bronze image found in Dong Duong (Museum Hanoi) but supposed to have originated from Ceylon (ibid., Pl. CXIV, Fig 342 and also A.A.I., Pl. 137B), differ in that that the whole drapery, and the part of the body it covers, are in one mass which is rather unusual, and at the same time, not a happy creation, though the Ceylon Buddhas prove to be better examples within the two sets.

[12] For the Kaniṣka's figure see A.A.I., Pl. 44; for the Buddha image, vide G.S., Pl. 139.

[13] H.I.I.A., Pl. XXXIII, Fig. 138, especially the one standing at the rear side shows this tendency in a better way. Dong Duong metal image is a still better example, see ibid., Pl. CXIV, Fig. 342 or A.A.I., Pl. 137B.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

sions the difficulty of interpretation arises, on account of the indiscriminate employment of this device along the other modes, as in the left upper arm of one of the Amarāvatī Buddhas,[14] but such rare and, moreover, indiscriminate uses are not the factors to be depended upon to decide any issue.

From the above discussion it has emerged that the treatment of the convex folds in the form of raised ridges is known, even according to miserly estimation, already in an epoch not later than the 1st century B.C. This is attributed by some to the Persepolitan influence, though not quite convincingly.[15] Even if such an influence is true, it would not alter the point in question, for in that case too those examples remain earlier in date. Then the next conclusion is that by the 2nd century the treatment of wider zones between the raised ridges has undergone some change, which reveals the real nature of these ridges more obviously. There is not much ground, therefore, to trace the treatment of the folds of drapery in the form of raised ridges in the 53 metre Bāmiyān colossus to any one late Gandhāran stone image particularly or, for that matter, to the "Gandhāran" school of images on the whole, for it has been a commonplace already for centuries, and that too in many centres. In spite of that the question of immediate inspiration may theoretically arise. But what is the proof of such a direct inspiration?

In light of the above discussion it is worthwhile to see at this juncture how far the Gandhāran and Indo-Afghan ways of treating the drapery as a whole accord with those of other early and contemporary schools prevalent in the rest of India. It may be pointed out at the outset that the similarities, to which attention will be drawn below, need not be absolute. As a matter fact, the absolute similarity may be difficult to find out, because the attitude of the artists of these schools towards drapery, is different, from those of other schools, to some extent, and not to the full extent; if the latter were the case, there could have been no scope for any similarity. This difference in the attitude is obviously due to the influence of the Graeco-Roman or even maybe of some similar traditions. As a result, the depth of the drapery becomes slightly great in comparison to that found in the rest of Indian schools. Yet, it has not acquired the full volume as in the Graeco-Roman traditions. It is in this way that it is not fully devoid of the Indianness. Even if the similarities are not absolute, they are capable of suggesting the real relation between these two and the rest of the Indian schools (perhaps this could have been brought out in a better way, had a good library or the collection of pictures were at an easy disposal).

Mode 1 may be found, particularly in the figures standing left to the panel preserved in the Rijksmuseum voor Volkenkunde, Leyden or a group of two musicians, from Butkara and preserved in the Museo Nazionale d'Arte Orientale, Rome, may exemplify it very well.[16]

[14] H.I.I.A., Pl. XXXIII, Fig. 139.

[15] A.A.I., p. 48.

[16] G.S., Pls. 5 and 48 respectively. One of these males is said to be a dancer, but there is no feature unmistakably indicating it to be so.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

Similarly, mode 1a can be noticed in the following specimens: on the scarves of some of the figures of the panel preserved in the Rijksmuseum, referred to above; right knee of the Bodhisattva, preserved in Museum Rietberg, Zürich; right shank of the Hāritī in the group, preserved in the Ashmolean Museum, Oxford; Siddhārtha's school going, preserved in the Victoria and Albert Museum, London; etc.[17]

Mode 2 can be found in the following objects: toilet tray, preserved in the British Museum, London; trousures of Kaniṣka (?), from Surkh-katal, preserved in Kabul Museum; a devotee from Haḍḍa, preserved in the same museum; etc.[18] Mode 2a is represented in the scarves on the left shoulders of the two figures standing on the left to the panel, preserved in the Rijksmuseum, referred to already.[19]

Mode 3 is to be seen in several pieces, such as nativity of the Buddha, preserved in the Museum für Indische Kunst, Berlin; *Māravijaya*, preserved in Rijksmuseum mentioned previously; *Dharmacakrapravartanā*, kept in Musée Guimet, Paris; etc.[20]

Mode 4 is represented in many sculptures, for example the right leg of the Bodhisattva, preserved in Museum Rietberg, Zürich; another image of the same deity, kept in British Museum, London; Buddha from Paitava, preserved in the Musée Guimet, Paris; *Mahāparinirvāṇa*, kept in the Victoria and Albert Museum, London; standing Buddha, Hoti Mardan; etc.[21] The folds referred to in these examples, especially in the last-mentioned, have a slightly different look, which owes to the fact of their having slightly slanting edges. This treatment lends them a somewhat realistic appearance. These examples are deliberately referred to here to point out that in spite of their so-called realistic appearance, they are basically nothing but the raised ridges. But the clear examples are in any way neither in want nor rare. To name some: sleep of the women, preserved in the British Museum, London; standing Bodhisattva (especially the right leg and left upper arm), Museum of Fine Arts, Boston; so-called Presentation of the Bride to Siddhārtha (Rowland's collection); *Mahāparinirvāṇa* from Loriyān Taṅgai, preserved in the Indian Museum, Calcutta; etc.[22] There cannot be or should not be any dispute in these cases about their having string-like form.

By enumeration of these four modes it is not claimed that these are all to be found in the Gandhāran and Indo-Afghan schools. That may not be the case even with other schools. If investigated thoroughly, some more modes may or may not be discovered, that is not important here. But, indeed, these are the most frequently seen varieties. Prevalence of these modes

[17] G.S., Pls. 5, 64, 70 and 88 respectively.
[18] G.S., Pls. 20, 21 and 112.
[19] G.S., Pl. 5.
[20] G.S., Pls. 85, 93 and 95.
[21] G.S., Pls. 66, 67, 73 and 103 and A.A.I., 31 respectively.
[22] G.S., Pl. 89; A.A.I., Pls. 35, 36 and 37 respectively.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

in the Gandhāran school on the one hand and in various early and contemporary schools in the rest of India on the other, as illustrated above, clearly indicates that the Gandhāran and the Indo-Afghan treatment of drapery is not totally based on the Graeco-Roman or allied traditions, as has been hitherto believed and claimed, but it is equally dependent on the native, i.e. Indian tradition. One or two of these modes may also be found in the Graeco-Roman traditions in an akin form, even then, its dependence on native tradition should not be denied, for after all inner factors will always have stronger effects. By this the influences from the Graeco-Roman traditions are not disregarded. It has been already pointed out that owing to this influence the drapery has become slightly heavy, for its depth has increased, which in its turn hides the form, only to a limited extent, in comparison to the tendency of other Indian schools, and the postural lines too are not so clearly accentuated as in the latter. Further, on account of the same influence, a pretension has come to follow the natural principle, viz. the point of pull and suspension as a source of folds. Exceptions to this pretension are indeed a few.[23] Needless to mention that other realistic features, so-called "eyes", etc. have never been properly introduced into the Gandhāran sculptures on the whole, though they are rarely found in the stuccos of the Indo-Afghan school. It may also be noted that in spite of increased depth in the cloths, they have never represented in natural volume and, instead, they remained adhering close to the bodies as in other Indian schools, in other words, they are not airy and bulging.

All the features discussed above clearly indicate that in spite of the external influences the native tendencies have remained in a considerable degree, although those influences have been able to conceal them, giving a new look. Some writers have hitherto considered that the inferior work was a result of the inability of the native artists to grasp the Graeco-Roman spirit. But this does not fully or properly explain the situation. True, in a sense it may be a failure. Why this happened is a question which is far more interesting than the mere conclusion or judgement that it is a failure. Obviously the new tendencies or influences that treat the drapery with all its natural features, have not accorded with the *esprit général* of the natives, whose predilection is to conceive the human form in its purity in spite of its being draped. These two tendencies — one seeking to enrich with natural looks and the other trying to reduce to the minimum — are reversals (need not be contradictory) to each other, so one has to choose either of them. But the Gandhāran and Indo-Afghan artists seem to have tried, not of course consciously, to go in between, but the result is a failure from both ends, especially in the Gandhāran school or rather in stone sculpture at large to the extent that the cloths appear as if made of coloured glass.

In the history of Indian art a similar event recurred in our own epoch. Another general tendency in India, which is historically true in all the ages, is that never any branch of art —

[23] For instance, A.A.I., Pls. 31, 33, 34 (in all these cases, see legs particularly), lying Buddha in Pl. 37; G.S., Pls. 5, 20, 46, 47, 48, 54, 66, 67, 72, 73, 89, etc. The examples as these are innumerable, in which either partly or fully only a pretension can be seen. Those forming the exception to this, are few, as G.S., Pl. 4, etc.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

sculpture, painting and architecture — has been conceived in terms of light, especially in the sense as emanating or flooding from a given source and direction. Hence it has not led to any success, when, in the last part of the previous and in the beginning of the present century, Indian painters have tried to imitate the academic type of the European painting with its principle of light, although it has not been as unsuccessful as the Gandhāran or Indo-Afghan drapery. It is not to speak against the outside influences, for they are as natural to any society or nation as six months old child's getting teeth. But there is no harm in making assessment of the effects resulted from a given influence. These incidents show that the influences come for the reasons other than understanding as well as those which do not accord with the general predilection of a given society, do not lead to any meaningful success.

Whatever be the aesthetic or other results of the efforts of the Gandhāran and Indo-Afghan artists with reference to the treatment of drapery may, they should be viewed also in the context of the Indian trends. Accordingly we have reached the conclusion that the string-like folds as such are not the original creation of those artists, but, on the contrary, they have followed the tradition existing in the land. This mode, however, has further stages of development, which must also be noted here. Three Buddha images from Mathurā, assigned to the 5th century A.D., are famous, including for their treatment of the folds in the form of raised ridges and Hallade's observations on the development of these and preceding Buddha images, are very illuminating.[24] But some points may be added here. To fashion the monastic robe of the Buddha and of the monks of this fold, to cover both the shoulders seems to have been set by the Gandhāran artists or by the people of the colder tracts, which has been adopted in several centres, including Mathurā. The string-like folds as such are in no way the speciality either of these or any of the Gandhāran or Indo-Afghan Buddha images, but the particular pattern in which the folds are arranged, is the speciality of these three images. This should not or must not mean, however, that this pattern has come into being for the first time with these three figures. There are indications, for instance, the name, "Udayana" type, by which this pattern has come to be called and the similar factors, make one to believe that this pattern is older than these three images. But we know it now from these examples and no wonder that our discussion bases itself on these images.

In all the three images, the folds on the lower half of the body are symmetrical while on the upper half they are asymmetrical. The difference existing between the folds on the upper body of the headless figure on the one hand and of the rest on the other is too minor and for our purpose we can consider them as the same. These folds form the loop not at the centre of the trunk. Of these the lower ones form it near and slightly right to the navel and the loop is gradually shifted to the right and thus the upper folds have it near the right armpit. The

[24] See H.I.I.A., Pl. XL, Fig. 158; A.A.I., Pl. 80 and G.S., Pl. 141 respectively for all the three images. These three images are referred to here, only because these are often reproduced, but in fact in Mathurā Museum itself there are some more of such specimens. For Hallade's remarks on a set of similar images, see ibid., p. 166.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

upper edge of the robe is taken from the back over the right shoulder and placed on the left shoulder, as its end hangs at the back. When the end lying on the left shoulder is not collected, the folds should form the loop at the centre or axis of the trunk, for the suspension is distributed on both the shoulders equally. This pattern on the upper half of the body has thus no reference to life. But what is its real reference? The immediate reference of this fashion is the kind of examples similar to the Great Miracle from Paitava.[25] This again suggests that this pattern has evolved on the basis of Gandhāran images. It must be further and at once added that also the Paitava example or its kind, in their own turn, have no reference to life to support that particular pattern. That pattern of arranging folds, is really based on the fashion, in which the right shoulder is left uncovered and the edge of the robe passes through the right armpit or a region slightly below it to ascend to the left shoulder and finally to hang at the back. This is amply evidenced by the long folds running from the left shoulder obliquely on the trunk of the Paitava and similar examples. The folds in three examples under discussion have long folds on the left side running more or less in the similar course to betray the dependence of this pattern on the specimens like that of Paitava, the pattern of which itself is based on the fashion of covering only one, viz. the left shoulder. This sort of development is not confined in any way to this or that group of images, but it is of a general nature.[26]

In spite of the gradual evolution of this pattern, in all likelihood, from the Gandhāran creations, it might not have developed within the Gandhāran school. As mentioned already, this pattern has come to be known as "Udayana" type, with the story woven around it that King Udayana, a contemporary of the Buddha himself, has got it made for the worship after the Buddha's passing away. According to the known history, it is impossible that the Buddha's image was made at such an early date. Nevertheless, the alleged association of this pattern with Udayana, if Udayana was not a misunderstanding for Udyāna, may connect its origin with Western India, maybe with Mathurā itself, though these three figures are not the first of this kind.

The thin, string-like folds as seen in these figures can create in certain light conditions, an illusion of their being incised lines. The upper part of the body of one of these three figures,

[25] G.S., Pl. 73.

[26] This kind of fashioning the folds without reference to the nature becomes accepted norm, hence the arrangement of U-shaped folds appropriate to the robe covering both the shoulders are executed on the robe on the front of the trunk of a Fondukistan Buddha, which runs through the right armpit to cover only the left shoulder (G.S., p. 147, Pl. XVI). Similar peculiarities are found in the innumerable examples and if they are to be judged from the realistic point of view, all these would go without head and tail. Hence these facts too may prove that the Graeco-Roman way of treating the drapery, which is largely based on realistic principles, is not the sole factor that has guided those artists. Those scholars who are habituated to consider that the "Hellenism" is better preserved in "Gandhāra", and who with this impression try to underrate the Central Asian modes, should realize this fact earlier. One should not, therefore, judge these ways of executing draperies either in the Gandhāran and Indo-Afghan schools or in Central Asian art, etc. on the basis of realism, but one should see the individual cases, if they are creating a pattern which can evoke the aesthetic feeling, irrespective of the question whether or not they have a reference to nature or to any other thing.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

especially its left half, reproduced by Coomaraswamy,[27] creates the same impression at the first instance immediately after opening the relevant page. This means a reversal effect. In fact there are actual creations, whose folds are fashioned in a reversal process, although there is a minor change in the pattern, as for example, a metal image from Sultāngaṃj or even from Nālandā,[28] where the lines are incised throughout. In the former case the doubt arises whether the incised lines themselves are meant to represent the convex folds or the spaces between them (the observation of the original may be the best way to decide the question). Whatever may be the value of these lines, there is no doubt about it that it is the reversal treatment to the raised ridges arranged in the pattern known as Udayana type. It need not be assumed that this develops because of the material, viz. the wax employed for making the originals of the metal images. This treatment is not in fact unknown in stone, for instance, a Buddha image of unknown provenance, but belonging to the Mathurā school (and preserved in Mathurā Museum, with the No. A. 4), has such folds. The incised lines are after all very old, also in stone. But what is new is the pattern in which these are effected. Since these stone and metal figures with the incised lines are almost contemporary to those stone images having raised ridges, it is difficult at present to decide which of these modes is earlier, although it seems logical that the mode seen in the former images is a development from the raised ridges, in a reversal form.

In conclusion it may be pointed out that the mode of executing the folds of drapery in the form of raised ridges, irrespective of the question in which pattern they are arranged, has continued, in different parts of the country, through centuries till today as may be seen in metal and stone images being made in the South or perhaps also elsewhere. This can also be seen outside India, particularly in Tarimia (East Turkistan), where there are innumerable examples in statuary; for that matter they are not lacking in painting.[29] The same methods as interpreted in Tarimia can be found in the Far East abundantly, though the details might have been modified according to the local taste or fantasy.

[27] H.I.I.A., Pl. XL, Fig. 158.

[28] For Sultāngaṃj example, preserved in Birmingham Museum, see H.I.I.A., Pl. XLI, Fig. 160; A.A.I., Pl. 85; G.S., Pl. 144 and for Nālandā specimen, vide A.A.I., Pl. 94B.

[29] For example a wall-painting from Kizil, see A.A.I., Pl. 66A. The folds are created by drawing two lines close by and parallel on the scarf tied obliquely across the hips of the female member of the *mithuna*, believed to be *Gandharvas*.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

Excursus Two

DIFFERENT ANATOMICAL ACCOUNTS IN THE EARLY LITERATURES

After the *Ṛg-Yajus-Sāma-Vedas* whatever branch of learning we get under the name compounded with the word *Veda* seems to be of Kṣatriya origin. The *Nāṭyaveda*, the science of play writing and play production may be an exception to this, because our present knowledge does not permit to attribute it to this class of people. The *Atharvaveda* — or at least a great part of it — is supposed to be a creation of these people. In the nature of things there cannot be any dispute about the Kṣatriya origin of the *Dhanurveda*. On the basis of hitherto prevalent view we have pointed out at the beginning of the chapter III that the surgical part of the *Āyurveda* was a contribution of these people, but as a matter of fact the case may not be different even when the beginning of the entire *Āyurveda* is taken as a whole, i.e. inclusive of medicinal aspect. True, we come across the names of *Aśvinīdevau* in the Vedic pantheon, who have their counterparts also in the Greek mythology. Thus they may belong to the "Ur-Aryan" stock; if so, it takes us back to quite a remote age. But these twin gods are known to heal the diseases, but there is no indication of a medical science connecting it with them. The medicine as a practice should be distinguished from the medical science, for after all as a practical need of the day to day life the former can be found in some form or the other even in the very primitive societies. If the question of medical science as such arises the tradition attributes it to Dhanvantari who belongs to the said class, and the very name of his is also suggestive of this fact. The *Suśrutasaṃhitā*, the earliest known work in the field, may also indicate it, for it is said to owe its origin to this class of people, though much later in date in comparison to the beginnings of the science in the early part of the 1st millennium B.C., but certainly it is the bearer of the same tradition. Thus in all likelihood the medical science as a whole (not the medicine as practice), called *Āyurveda* is the one that was started and also developed to a great extent by the Kṣatriyas. Be whatever it may, there cannot be any doubt about it that at least the surgical part of it, i.e. anatomy, physiology, were the creations of these people, in the beginning as well as for a long time. The reason for the development of it in their hands can be inferred to be practical. They fought wars and hence the need arose to cure the wounds received, sometimes with surgical methods. This can be done, when the system of the organism is properly understood and, this in its turn necessitates the dissection of the bodies, of course the dead ones. This means that it was related, in an indirect way, with the *Dhanurveda*. In this way either anatomy or physiology or for that matter *Āyurveda* as a whole was empirical in the beginning and an independent practical science. This point has a bearing on the cultural life of that age and of subsequent centuries for a long time, and precisely that is the justification of sketching this development here.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

The philosophical speculations — or at least a large part of them — found in the early *Upaniṣadic* literature were made by Kṣatriyas, whether one calls them early Vedānta or otherwise. Similarly, most of the earliest philosophical systems (not mere speculations) such as Sāṃkhya, Buddhist, Jaina, etc. were of Kṣatriya contributions.[1] If we connect these two facts — the development of the medical science (or at least anatomy and physiology) on the one side and the philosophical systems on the other, in the hands of Kṣatriyas — we can arrive at certain interesting conclusions. It is this knowledge of anatomy that made those people speculate in the early *Upaniṣads* about the locality in the body in which the Real Principle resides and activates the whole body. According to some *Upaniṣadic* accounts certain Kṣatriya kings claimed that the Brāhmaṇas (Pron. Bramhaṇas) do not know many secrets. The reason behind this claim partly was that Brāhmaṇas most probably lacked the detailed knowledge of the system of organism. Although the human body was made the centre of investigation, it was the intention of those people to know about the ultimate truth not only in the living beings of all kinds but in the universe at large. At the beginning the anatomy or physiology was an independent science and yet it was coupled with the philosophical speculations later on. The investigation has not been done up to now to find out the bearing of the physiological science on the development of either the philosophical speculation or of its early systems. But it would be enough for our purpose to note that whenever the need arose the necessary amount of material was drawn from the anatomy or physiology or from both and presented schematically not only in the *Upaniṣads* but also in the early philosophical systems. As a matter of fact this has become a general tendency for several centuries. Thus these sciences became common stock for the entire Indian culture, in an extremely amazing manner, which can be fully realized only after thorough investigations are conducted.[2] Another ancient general tendency is to group all the classified items along with the mention of the relevant numeral.

With this introduction to the background of bringing the bodily elements into different branches of learning we present some of such instances here. It must, however, be pointed

[1] As can be expected, the Indian culture too, as every other culture, might have been a contribution of various peoples, and not specifically the Āryans. But not much is yet known to what extent either the Kṣatriyas or the Brāhmaṇas owe to other peoples. These two classes of people are responsible for the scriptural evidence we have now, irrespective of the question whether it is in a direct or in an indirect manner. Accordingly, these two peoples figure very prominently. It is, therefore, not the intention of this writer to attribute anything to this or that class of people without some evidence, and if that evidence itself need be re-assessed on scientific grounds, that would be a different matter.

[2] Some people tend to trace the beginnings of Tantrism even to the Vedic period. If it is to be done so on the basis of the *nāḍī* or other physiological theories found in the early *Upaniṣads*, that would prove to be a mistaken notion. Tantrism is a borrower from the said branches of learning, which were empirical in the early ages at least in intention, where there is no scope for any mysticism and rites which are inseparable and essential aspects of Tantrism. The fact that a religious sect as Tantrism borrowed the material, was perhaps a harmful factor to the growth of these sciences.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

out that we had no plan while choosing such instances and drew them from whatever source was at hand. This is a subject in its own right to be investigated independently and demands a long time and labour. If, however, studied fully, it may lead to amazing conclusions, but it is not the place for it. The relevant passages to be cited here cannot be arranged with a meaningful system on account of their limited number, so they are being presented simply in a convenient order. Further, it would take too much space, if each passage is to be explained what it means in its own context and for what purpose the analogies were drawn. These details are hardly pertinent to our present attempt meant to show only the ideas, held by ancient people, of the consecutive order of the major elements with which human bodies are built up. At the end of each passage, therefore, attention is drawn to the anatomical points leaving all other details.

A later *Upaniṣad*, viz. the *Garbhopaniṣad* enumerates certain substances thus: *rasācchoṇitaṃ śoṇitānmāṃsaṃ māṃsānmedo medasassnāvā snāvno'sthīnyasthibhyo majjā majjñaśśukram śukraśoṇitasaṃyogādāvartate garbhaḥ*.[3] The blood results from the chyle, the flesh from the blood, the fat from the flesh, the sinews from the fat, the bones from sinews, the marrow from the bones, the sperm from the marrow and from the combination of the sperm and germ (*śoṇita*) results the embryo (*garbha* or pregnancy). This matter is concerned mainly with the embryology, though the origin of the necessary elements — sperm and germ — are explained. This kind of accounts contain, besides additional ones, those substances which we have noticed in the metaphorical concept of the clay image, viz. i. the blood, ii. flesh, iii sinew (instead of *nāḍī*, but of the similar category) iv. fat (though mentioned in a different place in the order) and v. bones. In the places like this the purpose of counting various substances is guided by different factors, viz. to explain how various substances develop. A different account consisting as many as 32 items is found in the Buddhist scriptures: *kesā lomā nakhā dantā taco maṃsaṃ nahāru* (or *nhāru*) *aṭṭhi aṭṭhimiñjaṃ vakkaṃ hadayaṃ yakanaṃ kilomakaṃ pihakaṃ papphāsaṃ antaṃ antaguṇaṃ udariyaṃ karīsaṃ matthaluṅgaṃ pittaṃ semhaṃ pubbo lohitaṃ sedo medo assu vasā kheḷo siṅghāṇikā lasikā muttaṃ ti*.[4] This speaks of what items the body contains, but not with which it is made of, as is also clear from the starting phrase of the passage: *atthi imasmiṃ kāye*. It is not known to us on what ground or principle these thirty-two items are counted, not less or more. More or less the similar type of the list is found in *Maitrāyaṇyupaniṣad*: *bhagavannasthicarmasnāyumajjāmāṃsaśukraśoṇitaśleṣmāśrudūṣikāviṇmūtravātapittakaphasaṃghāte durgandhe nissāre'smiṃśarīre kiṃ kāmopabhogaiḥ*.[5] That the intention of the passages, like this, is to describe the worthlessness of the

[3] G.Up., 3.

[4] K.N., Vol. I (*Khuddakapāṭha*), p. 4. The list is also found in other parts of the *Tripiṭaka*, e.g. ibid., Vol. V (*Paṭisambhidāmagga*), pp. 9-10; A.P.; V., pp. 238-39. Some of these items are also found in K.N., Vol. I (*Suttanipāta, Vijayasutta*), p. 297.

[5] M.Up., 1.3. The questions of origin and correspondences (in other texts) of this passage are discussed in detail by Horsch, see V.G.Ś.L., 197 ff.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

body, is too obvious, and hence the selection of the items to suit the purpose. Nevertheless it is also clear that the material was drawn from the science of anatomy, as is also the case with the above quotations. Apart from this category of material, there are other kinds of accounts, which are more interesting from our standpoint.

In the *Taittirīyopaniṣad* the following bodily account, i.e. according to its usage, *adhyātma*, is found: *athādhyātmaṃ/prāṇo vyāno'pāna udānassamānaḥ/ cakṣuḥ śrotraṃ mano vāk tvak/ carma māṃsaṃ snāvāsthimajjā/*[6] The five elements of the body with which it is conceived in this place to be made of, are enumerated regularly from outside to inside, viz. skin, flesh, sinew, bone and marrow. The same is found in one of the few earliest scriptures of this class, *Chāndogyopaniṣad*, with an alteration: *loma himkāraḥ, tvak prastāvaḥ, māṃsamudgīthaḥ, asthi pratihāraḥ, majjā nidhanam/ etatyajñāyajñīyamaṅgeṣu protam.*[7] Here the sinew is omitted and the hair (*loman*) is included. The rest are the same as in the preceding account, and their number too is the same, namely, five. No historical development can be read in this alteration, for as shall be quoted below the words *loman* as well as the *snāvan* come together in the literature belonging to the same period. The account of the *Chāndogyopaniṣad* was borrowed in a later scripture, *Jaiminīyopaniṣad* in which it occurs twice, though not verbatim.[8] Again the *Chavisutta* (*lābhasakkārasiloko*) of the *Suttapiṭaka* runs: *sāvatthiyaṃ viharati/ dāruṇo bhikkhave lābhasakkārasiloko/ lābhasakkārasiloko bhikkhave chaviṃ chindati/ chaviṃ chetvā cammaṃ chindati/ cammaṃ chetvā maṃsaṃ chindati/ maṃsaṃ chetvā nhāruṃ chindati/ nhāruṃ chetvā aṭṭhiṃ chindati/ aṭṭhiṃ chetvā aṭṭhimiñjaṃ āhacca tiṭṭhati/* etc.[9] The same account is repeated in the immediately following *sutta*, viz. *Rajjusutta*. In this account six elements are enumerated as against the five in the above lists. They are: i. *chavi*, ii. *camma*, iii. *maṃsa*, iv. *nhāru*, v. *aṭṭhi* and vi. *aṭṭhimiñja*. Except the first one, they mean respectively: ii. skin, iii. flesh, iv. sinew, v. bone and vi. marrow. As far as the *chavi* is concerned, it usually means light or colour, or rarely shade of colour or hue. But in this place it is used in the sense of topmost skin or cuticle having colour, i.e. by the colour of which we assess the complexion of a person. The word *chavi* is used in the sense of cuticle is also known from other sources, for instance the *Nāṭyaśāstra*.[10] As a matter of fact the same

[6] T.Up., 1.7. Incidentally an interesting point may be mentioned. The word *adhyātma* here does not mean spiritual or that which is connected with soul (nor even with the Universal Soul), as has been current for more than two millennia. Although this scripture is assignable to the 5th-6th centuries B.C., still the word *ātman* was used in its older sense, self or as a synonym to *sva*, not with reference to the soul but only to the body.

[7] Ch.Up., 2.19.1.

[8] J.Up., 1.36.6 and 4.10.1-8.

[9] S.N., Vo. II, p. 198. The editor notes *nahāru* as the reading of the Siamese edition instead of *nhāru*. As a matter of fact both these readings are often met with and perhaps both forms are correct.

[10] *sā taṃ sarvaguṇairhīnaṃ sasvaje karkaśacchavim/*
vane kaṇṭakinaṃ vallī dāvadagdhamiva drumam//
N.Ś., Vol. II (Ch. 16, verse 48), p. 323 (as an example of the variety of *upamā*, viz. *nindā*).

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

is to be understood from one of the thirty two *mahāpuruṣalakṣaṇas*, the *sukhumacchavi* (Skr. *sūkṣmacchavi*) of the Tripiṭaka tradition.[11] Coming to the *Āyurveda* we find that this *chavi* is not different from the first or topmost one of the seven skins counted there, as is clear from the *Suśruta: sapta tvaco bhavanti/ tāsāṃ prathamā'vabhāsinī nāma yā sarvavarṇānavabhāsayati pañcavidhāṃ ca chāyāṃ prakāśayati/ sā vrīheraṣṭādaśabhāgapramāṇā sidhmapadmakaṇṭakādhiṣṭhānā.*[12] The real point to be noted here is that the *chavi* is counted separately from the *carman*. Though both are the skins, the former mainly refers to the colour. Hence this can be considered to be the counterpart of the *varṇa*, the last one of the seven *saṃskāras* of a clay image. If the marrow (*majjā* = *aṭṭhimiñja*) is considered to be alternative of the fat (*medas*) of the clay modelling, we get all the elements in both the accounts alike in a corresponding manner, save one, namely the blood (*śoṇita*), the sixth of the seven elements of the clay figure. But even this is found in a different account in the *Tripiṭaka* itself under the name, *Kāyānupassanā*. If the same is to be quoted after the phrases intervening different items are left out, it runs as follows: i. *paṭhavīkāyaṃ*, ii. *āpokāyaṃ*, iii. *tejokāyaṃ*, iv. *vāyokāyaṃ*, v. *kesakāyaṃ*, vi. *lomakāyaṃ*, vii. *chavikāyaṃ*, viii. *cammakāyaṃ*, ix. *maṃsakāyaṃ*, x. *rudhirakāyaṃ*, xi. *nhārukāyaṃ*, xii. *aṭṭhikāyaṃ*, xiii. *aṭṭhimiñjakāyaṃ.*[13] Of these thirteen items, the first four seem to have been counted in order to include the senses (*jñānendriya*). The *lomakāya* is the same which we have noted in the early *Upaniṣadic* account, such as that of the *Chāndogyopaniṣad* and also that of *Dattiṃsākāra* of the *Tripiṭaka*. The *keśa* is also included in *Dattiṃsākāra* in addition to *loman*. Here the distinction is between the long hair (of the beard and that grown on the head, which is referred to as *keśa*) and the short hair (that grows on the rest of the skin, which is referred to either *loman* or *roman*). The rest are the same as in the *Chavi-* and *Rajju- suttas* quoted above, except the one, viz. *rudhirakāya*, "body of the blood". This *rudhira* is the synonym of the *śoṇita* of the clay modelling. Thus we find here all the elements of clay modelling with one alteration, i.e. *majjā* instead of *medas*. Before taking up the similar and highly valuable account of one of the earliest *Upaniṣads*, further short lists may be discussed on account of their being able to throw light more clearly.

After citing a passage from the *Taittirīyopaniṣad* we have pointed out that the elements of the body are enumerated in it from outside to inside, and it applies to all the accounts quoted from there onwards up to now. But in all of them there is no suggestion in what relation these elements remain to one another. We find a hint about it in the few passages to be discussed in this paragraph. In the *Dhammapada* we find a brief reference to some of these elements, such as *aṭṭhīnaṃ nagaraṃ kataṃ maṃsalohitalepanaṃ.*[14] Here the flesh and blood is stated

[11] D.N., Vol. II, p. 15, line 21. The same list is repeated, e.g. ibid., Vol. III, 110 ff; M.N., Vol. II, 383 ff.
[12] Sś., pp. 274-5.
[13] K.N., Vol. V, for *paṭhavīkāyaṃ*, see p. 497 and for the rest, p. 498.
[14] K.N., Vol. I, p. 31 [*Dhammapada* (verse 150), *Jarāvagga*].

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

to be coated on the bones, i.e. covered with the former two. The interesting expression here is *lepana*, coating. The same idea is also met with in the *Manusaṃhitā*. To quote, *asthisthūṇaṃ snāyubaddhaṃ māṃsaśoṇitalepanam/ carmāvanaddhaṃ durgandhi pūrṇaṃ mūtrapurīṣayoḥ/*[15] Although the immediate source of the *Manusmṛti* in this respect is obviously the Buddhist scriptures, there are some more valuable points here in addition to the *māṃsaśoṇitalepanam* (typically identical phrase) noted in the *Dhammapada*. These are: the bone is stated to be a post; this is bound by the *snāyus* (here the *snāyu* is used but not the usual *snāvan* of the *Upaniṣadic* accounts quoted); then the coating with the flesh and blood; and finally, tied over with the skin. The commentators tend to interpret it as a comparison between the human body and a mud house, as may be supported by the use of the word *sthūṇa*, yet the similarity with the account of clay modelling is also very clear. Again we find another account in the *Vijayasutta* in the following way: *aṭṭhinahārusaṃyutto tacamaṃsāvalepano/ chaviyā kāyo paṭicchanno yathābhūtam na dissati//*[16] If it is to be explained, not grammatically, but according to the sense intended to be conveyed, it runs thus: 'Though built up of the bones and sinews and coated with the flesh and skin, the body, being covered with the pigmentary cuticle, does not appear in its true colours.' The idea is more or less the same as noted above, with slightly different account of the individual items, such as *taca* (Skr. *tvac*) instead of *śoṇita*; *chavi* instead of usual *carman* and *nahāru* instead of *snāyu*. This difference is accounted for the fact that here the same scheme found in the *Chavi-* or *Rajju-sutta* is followed. For that matter the lists of the elements, in which the *medas*, fat is included, are not lacking. In the *Mahābhārata* it is said: *māṃsaśoṇitasaṃghāte medassnāyvasthisaṃcaye.*[17] On account of their having an indication of the relation of different elements to one another, the passages cited in this paragraph (except perhaps that of *Mahābhārata*) would take us very close to the account of materials of the clay image. Further, the order of counting is from within to without, as in the case of the clay image. Of course there is a constant variation in one case: in some texts the *snāyu* is used, in others *snāvan* and in the Buddhist texts *nahāru* or *nhāru* which is the same as Sanskrit *narhī* (English nerve). Similarly, we have noted that *Āgama* texts use the word *sirā*, in the place of which they also frequently employ the word *nāḍī*. Leaving aside the usage of the *Āgamas*, nothing can be definitely said until the special investigation is made about the question whether these different words are employed in their real meanings or in a popular way, i.e. without much bothering for the strict technical sense. For our purpose

[15] M.Sa., Ch. 6, verse 76. According to the edition included in our bibliography the reading is *snāyuyuta* instead of *snāyubaddha* of some other editions. Referring to the same verse, Monier-Williams gives the reading *snāyurajju*, as one of several other compounds, in the article *snāyu*. Obviously he found it in the edition he used, but we did not come across it in the few editions we consulted. It is very interesting, although the commentators tend to interpret it as a comparison between supposedly a mud house and the human body on the strength of the word *sthūṇa*. This verse is quoted in Rāmatīrtha's commentary, *Dīpikā* on the *Maitri. Up.*, 4.2. (p. 378) and included in the *Nāradaparivrājakopaniṣad*, 3.46. (p. 309).

[16] K.N., Vol. I, p. 297 (*Suttanipāta, verse 196*).

[17] M.Bh., 12.180.13 (in some editions it is 12.187.13).

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

it makes no difference, because all these words imply the fibrous material; hence we can take them all as similar to the ropes. It is, however, very difficult to decide the precise date of these Buddhist accounts. Even if we consider the approximate period of the composition of either Pāli texts or of *Manusmṛti* as the basis, these accounts need not be later than the closing centuries of the epoch that ends with the beginning of the Christian era. This need not fix the beginning of the kind of clay modelling under discussion, for there is a much older account of the same elements expressed by way of a simile.

The following *ślokas* are found in the *Bṛhadāraṇyakopaniṣad*:

yathā vṛkṣo vanaspatistathaiva puruṣo'mṛṣā|
tasya lomāni parṇāni tvagasyotpāṭikā bahiḥ||
tvaca evāsya rudhiraṃ prasyandi tvaca utpaṭaḥ|
tasmāttadātṛṇṇāt praiti raso vṛkṣādivā'hatāt||
māṃsānyasya śakarāṇi kināṭaṃ snāva tatsthiram|
asthīnyantarato dārūṇi majjā majjopamā kṛtā||[18]

To answer certain philosophical questions an anology is drawn in these verses between a man and a tree. To arrange it in a tabular form,

Man	Tree	Man	Tree	Man	Tree	Man	Tree
1. *loma* hair	*parṇa* leaf	2. *tvak* skin	*utpāṭikā* bark	3. *rudhira* blood	*rasa* sap	4. *māṃsa* flesh	*śakara* sap-wood (alburnum)
5. *snāvan* sinew	*kināṭa* cambium (not cork-cambium)	6. *asthi* bone	*dāru* heart-wood (duramen)	7. *majjā* marrow	*majjā* resin or gum		

Like the metaphor of the elements of clay figure as those of a human body, this simile between man and tree, is sevenfold, and if a comparison is to be made between these two accounts on the basis of the elements of the human body, we find that all are similar except two, viz. *loma* and *majjā* instead of *jīva* and *medas*. The difference in these two respects arises out of the objects to be compared with, viz. tree and the clay image. In other words, the elements are picked up according to the purpose, otherwise the comparison would not be possible. Another difference is that *majjā* is the innermost substance in this account while *medas* is the one that precedes the innermost item, viz. *śūla* in the clay image. This too arises out of practical needs: varnish being a protective factor can or must be applied on the surface of the wooden *śūlas*. In the case of the simile between man and tree of the said

[18] Br.Up. 3.9.28-30.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

Upaniṣad, the elements of the human body and that of tree are enumerated as they are commonly perceived, that is from outside to inside, whereas in the case of the metaphor related to the man and the clay image, the elements of the human body and that of a clay image are enumerated from within to without, because the modelling proceeds in that order. Thus this is a further instance suggesting that any change is determined by the need. In spite of these few differences it is too obvious that the underlying idea is the same in both the sets of these accounts. The *Upaniṣadic* account, therefore, establishes the antiquity of the concept, namely it goes back, without any doubt, to the 8th-9th centuries B.C. It should be, however, further investigated whether there would be any clue or evidence to place the clay modelling of the kind under discussion to the same antiquity.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

GLOSSARIES AND INDICES

KEY TO THE GLOSSARIES AND INDICES

1. The page in the case of the body of the text and each note in the case of the footnotes, are taken as a unit, and accordingly the words are registered once only, even when they occur several times in each page and in each note. Exception to this are those notes which run on more than one page, in which case they are repeated on the basis of the page.
2. Each entry is separated by a semi-colon.
3. The hyphen in between two page numbers implies, as usual, the pages falling in between.
4. The letter, n and a number, which follow the hyphen, indicate the note which is to be found on the page, which itself is indicated by the number preceding the hyphen.
5. If a word occurs in several notes on the same page, then a comma is added after the first note and the letter, n and the given number are added.

GLOSSARY A AND INDEX

Technical Terms and the Kind

This glossary comprises mostly the technical terms. Some of these are in use in other branches of learning or even in common language, but these have special meanings known in this branch of learning. Hence those Sanskritists having no acquaintance with the terminology of art should particularly note this fact, for otherwise they may tend to draw wrong conclusions. For the textual or for the other problems some of these terms — either in their present form or in meaning — are not beyond doubt. To point out this fact the following marks are employed.

1. A crossing mark, × is employed at the end of those words, the present form of which is either doubtful or questionable.
2. An asterisk, * is put at the end of those words, where there is some uncertainty of meaning which can be derived from them at present.
3. The mark, § indicates some general ambiguity, and hence further investigation in the matter is desirable.

If some detailed explanation of a given term is found in a page other than the first entry, a bold figure is added within the brackets in between the word and its explanation to indicate it.

A

adhamadaśatāla, inferior ten-*tāla* measurement, i.e. 116 *aṅgulas* (see *aṅgula* and *tāla*), 37.

ādhāra, i.e. *ādhāraśūla* used as a synonym of *upaśūla*, q.v., 43.

ādhāraśilā, the base-stone on which an image is permanently installed. This base-stone, in its turn, is fixed at the centre of the platform or altar, 67.

ādhāraśūla, some times also shortly called *ādhāra* and used as a synonym of *upaśūla*, q.v., 43; 57; 58; 66.

akṣimocana, rite of eye-opening, which is a part of the long ceremony of installation (*pratiṣṭhā* or, in popular use *prāṇapratiṣṭhā*) of an image, and originally this rite was of painting the details of the eyes with colours, but later it turned to be a simple rite without any use of colours, though certain acts or gestures seen till today indicate its original connections with colour. In its latter form it is prevalent till today, not only with the installation but also consecration of images, 95.

akṣisūtra, the imaginary horizontal line running across the inner corners of the eyes, 38; 39; 40.

alambuṣā, one of the seven ropes that branch out from the unified form of *iḍā*, *piṅgalā* and *suṣumnā*, in the head region and flow there to reach various points. This particular rope reaches the point of beginning of the genital organ. Originally this is the name of a *nāḍī* (q.v.), the name which is adopted to the rope representing the said *nāḍī*, 16; 80.

aṃsa, in common classical Sanskrit it is used at times as a synonym of *skandha*, shoulder, which is wrong, for technically it always means the upper part of the upper arm or, precisely speaking, the deltoid region, 55.

anantordhva, the space or height between the armature and the upper surface of the bed of Viṣṇu in reclining posture, the bed which is nothing but the coil of the

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

serpent, called Ananta. Thus this term is connected with the specific deity, but when reduced to the general level, i.e. when connected with any image in reclining posture, it can be said to be *śayanordhva*, q.v., and the terms, *āsanodaya*, *āsanopari* (q.v.) or even *āsanordhva*, etc. related to sitting posture are similar to this usage, 74-n29.

aṅga(s), any major part of the body, such as hands, legs, stomach, etc., 88; 88-n24.

aṅgula, (36) the basic unit of measurement, which, in the field of image-making and figure-drawing, has no standard length; it is a relative unit, and as such its length varies from case to case. To indicate this meaning it is, in the case of necessity, specified to be *dehalabdhāṅgula*, i.e. the *aṅgula* or *mātrā*= unit obtained by dividing the total height of the figure into a given number of parts, 16; 22; 22-n16; 34; 36; 37; 39; 40-n6, n7; 41; 41-n8; 44-46; 46-n9; 47; 47-n11; 48; 48-n15; 49; 49-n15; 50; 50-n16, n18; 51; 52; 52-n19, n21; 53; 54; 54-n24; 55; 55-n24, n25; 56; 56-n27, n28; 57; 57-n28; 58; 59; 61; 61-n2; 62; 62-n4, n5; n6; 63; 63-n7; 67; 67-n9; 68; 68-n10; 71; 72; 76-n33; 77-n33; 81; 86.

anūpa, damp soil, 19; 19-n2, n3.

anūpā, name of one of the three varieties of clay; it is called so, because it is obtained from the soil of the same name, 19-n4; 20; 20-n4; 87.

apakva-mṛṇmaya-pratimā, unbaked clay image, 5.

ardhacitra, (or *citrārdha*) image made in relief, 95; 102; 107; 152.

āsana, sitting posture, 46-n10; 66; 71.

āsanodaya, the space between the lower end of the abdomen (or beginning of the genital organ) and the upper surface of the seat, the space which is necessary in the case of images in sitting posture for finishing the height of the buttocks. The words, *pṛṣṭha* and *pṛṣṭhaphalaka*, which normally mean the back, are also employed as synonymous with this. See *anantordhva* having similar meaning in the case of images in reclining posture, 72-n24.

āsanopari, same as *āsanodaya*, 72-n24.

aṣṭabandha, (11) a kind of varnish or glue prepared by cooking eight different materials, 7-11; 11-n2; 69; 71-n23; 72; 80; 190; 216; 244. — two varieties of, 11.

aṣṭatāla-figure, the figure whose total height measures eight *tālas*, q.v., 35.

asthi, bone, 7; 8; 244; 263.

asthipañjara, skeleton, 65; 65-n4.

avakraśikhā (or *ṛjuśikhā*), mainly tenon, but at times it also means the projecting sides of the mortice, 43.

āvṛtanāḍīs, literally or originally it means the encircling *nāḍīs*, but here it denotes the minor ropes representing the above *nāḍīs* and tied around the armature over the vertical course of ropes, 85.

B

bāhu, upper arm (some times may also mean the arm as a whole), 40; 54-n24; 59; 62; 62-n4.

bāhudaṇḍa, synonym of the *bāhuśūla*, q.v., 48.

bāhumūla, the part of the upper arm which is on the horizontal line running across the armpits, 38; 40; 41; 62-n4; 84.

bāhuśūla, one of the component parts of the armature, representing the bone of the arm, viz. humerus, 43; 44; 49; 54; 54-n24; 55; 55-n24; 59; 62-n4; 70-n18; 71-n22; 85.

bandha, binding medium. (According to the *Āgama* texts this should be prepared out of the dried secretion of Feronia Elephantum, *kapitthaniryāsa* for the use in colours by adding different amounts of water. It is of three kinds: *svaccha*, *madhya*, and *medura* (see under these names), 11; 11-n1, n2; 90; 91; 91-n39; 92-94; 99.

bhakti, coating of colour or similar substance of liquid form, thus it may at times imply a layer, 91.

bhrūmadhya, central area between the roots of the eyebrows, 80.

bhrūpuccha, end of the eyebrow, i.e. that part of the eyebrow which runs on the templar region taking the curve on account of the converging planes of the frontal and templar bones, 186.

bimbam pakvam, as *pakvam*, i.e. terracotta, 97-n7.

bimbasvabhāvavarṇa, colour appropriate to the image, 92.

bindu, (93) literally point, but here it is the name of one of the six modes of applying colour, viz. application of colour in bold points and the area painted in this way should look like the place covered with mustard seeds; thus it is an indication of the size of the points. There are two more modes: *sīpa* and *udvartana*, in which also the colour is applied in successively smaller points. One of the several modern movements that took place in Europe in recent times, is called pointalism or pointalistic painting. These three modes cannot be named as the European pointalism, though technically they are the same. This is because the attitude behind these facts are different, 92; 93.

brahmadaṇḍa (pron. *bramhadaṇḍa*), synonym of the *vaṃśadaṇḍa*, q.v.,42.

C

chidra, hole or at times cavity, 47; 58.

cikkaṇa, § is of two kinds of water, one is lime-water, the other is the water obtained from the pots in which *śarkarākalka* is preserved. The latter variety is used to make the ground for painting colours on images, 91; 91-n38, n39; 99; 100; 100-n14; 101.

citra, according to the literary usage for several centuries it means a painting, but in the *Āgamic* terminology related to statuary, it is the image to be seen from all sides, to put it briefly, round or free standing figure. In earlier times, i.e. earlier than the *Āgamic* usages, known from 7th-8th centuries A.D., it meant not only a round figure but also a painted

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

round image. On the basis of it the other technical terms *ardhacitra* and *citrābhāsa* (q.v.) are coined in ancient times, 95; 98-n8; 106; 106-n33; 107; 240; 241-n36.

citrābhāsa, painting or painted picture. Literally it means that which looks like *citra*, i.e. round image or painted round image, 95.

citrārdha, same as *ardhacitra*, q.v.

citrita, painted or polychromatic image, 107.

cūrṇa, lime (not stucco), 25-n2; 29.

D

dakṣiṇāvartitā (in the preparation of ropes strands) twisted or turned clockwise, 16.

daṇḍa, synonym of *śūla*, the component part of the armature, but used only in the compound words like *vakṣodaṇḍa*, *vaṃśadaṇḍa*, etc., 42; 45; 47; 49; 57-n28; 69-n13; 78.

dārava, wooden image, 96; 97.

dārugarbha, polychromatic wooden image (according to the *Kāśyapaśilpa*, if the readings available are correct, it means painted unbaked clay image, which is, however, doubtful), 96; 96-n3; 97; 97-n5; 98; 99; 101; 104.

daśatāla-figure, the figure which measures ten-*tālas* in height (see *tāla*), 35; 37; 37-n3; 38.

dehalabdhāṅgula, a relative measuring basic unit which is nothing but a single part resulting from the division of the total height of the body of the image into a given number of equal parts (see *aṅgula* and *tāla*), 36.

dhruvabera, main deity, i.e. the one that permanently installed in the *sanctum sanctorum* of a temple, hence not transportable and not removable. No aspect of worship is offered to this but, instead, to the other figures, yet all worship belongs to it, 5; 67-n9; 96; 97; 98-n7; 99; 102; 104.

dhruvārcābera, *arcābera* made as *dhruvabera* (q.v.). When these two images are employed in temple along with one or more figures, the most of the aspects of worship, like ablutions, etc. are offered to the former only but never to the latter. If the circumstances would not permit to employ these two separate images, the different aspects of worship are offered, to the figure installed permanently in the *sanctum sanctorum* of a temple, hence it is called *dhruvārcābera*, 96.

G

gaganī, one of the three ropes flowing into the right arm after splitting, along with the other two, into eight branches and which in itself branches out, along with the other five, from the lower part of the rope called *suṣumnā*. Originally this is the name of a *nāḍī* (q.v.) the name which is adopted to the rope representing the said *nāḍī*, 17.

gala, according to the *Āgama* texts, it is double chin, but usually, and according to some other texts dealing with art, it is the front part of the neck or simply throat, 38; 38-n4; 39; 40.

gāndhārī, (the description noted under *alambuṣā* applies here too, but with reference to this name and, it reaches the area of right eye), 16; 80.

garbhagṛha, *sanctum sanctorum* of temple.

ghaṭiśarkarā, synonym of *śarkarā*, q.v., 25; 25-n2; 29; 102.

ghaṭiśarkarākalka, synonym of *śarkarākalka*, q.v., 25; 29.

ghoṣiṇī, one of the six ropes that branch out from the *piṅgalā* rope and that flow into the right leg. Originally this is the name of a *nāḍī* (q.v.), the name which is adopted to this rope representing the said *nāḍī*, 17; 17-n18.

guda, anus, 80.

gulpha, ankle, 39; 53.

guṇāṅgulam, three *aṅgulas* (q.v.), 56-n28.

guṇāntaram, gap of three *aṅgulas* (q.v.), 56-n28.

H

hanu, chin (but originally jaw, so the chin being the central part of the lower jaw it is also some times described as *hanu*), 39.

hanusīmā, lower edge of the chin, 38-40.

hasta, hand, including palm and fingers, 39; 40.

hastijihvā, (the description noted under *alambuṣā* applies here too, but with reference to this name and, it reaches the area of left eye), 16; 80.

hikkā, pit of the neck, 38-40; 40-n6; 46; 47; 54-n24; 68.

hīra, § (93) one of the six modes of painting colour, viz. application of the colour by moving the brush horizontally from left to right and *vice versa*, 92; 93.

hṛdaya, the point where the pit of the stomach begins (though usually and literally it means heart), 38-40.

I

iḍā, one of the three most important ropes flowing on the front surface of the *vaṃśadaṇḍa* (q.v.). Originally this is the name of a *nāḍī* (q.v.), the name which is adopted to the rope representing the said *nāḍī*, 16; 17; 80-83; 83-n10.

iṣṭakāgarbha, painted stucco (literally, painted brick image, i.e. made of burnt brick and stucco), 96-98; 98-n5; 101; 101-n20; 104-n30; 106.

J

jāṅgalā, arid soil, which is one of the three kinds of soils and also the name of the clay obtained from this soil, 19; 19-n2, n4; 20; 20-n4; 87.

jāṅgaladeśa, arid area or tract, 19-n3.

jaṅghā, shank, 38; 39; 41; 52; 59.

jaṅghāmūla, beginning of the shank, i.e. the area just below the knee or the area above the calf, 39.

jaṅghāśūla, wooden piece, i.e. the component of the wooden armature representing the bones of the shank, viz. tibia and fibula, 43; 44; 49; 49-n16; 51; 51-n19; 52; 52-n21; 53; 54; 54-n24; 63-n8; 67; 67-n9; 68; 69; 71-n23; 82; 199.

jānu, knee, 38; 39; 40-n7; 41; 49; 49-n16; 50; 50-n16; 52; 54.

jānusandhi, knee joint, 49; 49-n16; 53; 54.

jānuśikhā, tenon at the top of the wooden component (*jaṅghāśūla* representing the shank, which is meant for

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

the knee joint, i.e. the joint of this tenon with another component (*ūruśūla*) (see *śikhā* and *jānu*), 52; 53.

jānuśūla, literally component of the armature representing the knee, but this is not made separately, and instead, its measurement is added to the *jaṅghā-* and *ūru- śūlas* (q.v) by dividing it equally, 49; 49-n16; 51; 54.

jīva, life, 7; 8; 244; 263.

K

kakṣā, armpit, 38; 40; 41; 57.

kakṣāmūla, anterior edge of the armpit, 38; 41; 62-n4.

kalka, paste, 25; 27; 27-n11; 28; 29; 91-n39.

— *prathama*, the first of the three varieties of *kalka*, 27.

kambu, according to the *Āgamic* usage, it means female throat, but according to the general usage it is a synonym of *śaṅkha* (conch shell); perhaps on account of the fact that in literature the female throat (*gala* or *kaṇṭha*) is compared with *śaṅkha*, the word *kambu* itself is used in the *Āgamas* to indicate the female throat, 40.

kaṇṭha, front of the neck, 38; 40.

kapitthaniryāsajala, (27) the gum prepared out of the dried secretion (*niryāsa*) of the tree Feronia Elephantum (*kapittha*), 26-n10; 27; 27-n12.

karmamaṇḍapa, the hall or pavilion where the work is done, in short, work-shop, 33.

kaṭi, hip, 38; 40; 41; 49-n15; 59; 62; 63.

kaṭidaṇḍa, a component of the armature lying in the abdomen across the hips and representing the pelvic girdle, 42-44; 46-n10; 47; 47-n12; 48; 48-n14, n15; 49; 49-n15; 50; 51; 56; 56-n27; 57; 57-n28; 62; 63; 63-n7; 66; 68; 69; 70-n18; 71-n22; 73; 74; 77; 78; 81; 81-n8; 84; 189.

keśānta, literally end of the hair, i.e. the line indicating the end of growth of the hair on the skull, hence it is also called *keśāntadeśa* or more frequently *keśāntarekhā* meaning hair line. This can be seen in two places: firstly, at the upper part of the forehead including the templar regions, so this is *pūrvakeśāntarekhā*, front hair line, but it is seldom specified so, the simple phrases *keśāntadeśa* and *keśāntarekhā* often imply the front hair line; secondly, such a line exists also at the rear of the skull, near the neck joint, thus it is *paścimakeśāntarekhā*, back hair line, on the contrary to the former, it is often specified to be so, 38; 39.

keśāntadeśa, see *keśānta*, 38.

keśāntarekhā, see *keśānta*, 38.

kīla, nail, 43; 59; 69; 75.

kirīṭa, crown, 59.

korpara, also spelt as *kūrpara*, elbow, 39; 40; 40-n7; 54; 55-n24.

Korparasandhi, elbow joint, 54.

kuhū, (the description noted under *alambuṣā*, applies here too, but with reference to this name and, it reaches the area of anus), 16; 80.

kūrca, *kuśa* grass, Eragrostis cynosuroides, 28; 89; 89-n30; 90-n30.

kūrpara, also spelt *korpara*, q.v., 39.

L

lepaja, § according to the usages in certain places it means the same as *lepya* (q.v.), 241.

lepya, literally it means that which is to be created by coating, but as a technical term it came in the early times to mean the clay or stucco image created by applying the said materials in different coatings or layers. Still later it seems to have been used in further meanings. In all likelihood, however, it meant originally only the clay image created by coating it in layers, though no evidence has yet come to light to emphasize this point, 239-242.

lepyabimba, *bimba* being an image it means only the image made of clay by applying it in layers according to the technique described in this book, as can be said on the basis of Śrīkumāra's usage, 241; 241-n36; 242.

lepyacitra, as *lepyabimba* (q.v.); in this sense it is a coinage by the present writer. A definite usage of this compound in the same sense is not yet known (see also the General Index I), 241; 241-n36; 242.

liṅgamūla, also mentioned as *meḍhramūla*, the beginning of the genital organ, 38; 39; 41; 45; 50; 72; 80; 81-n8; 82.

M

madhya I (i.e. *madhyabandha*), literally middle, but it is the name of one of the three varieties (the other two being *svaccha* and *medura*, q.v.) of the binding medium prepared out of the dried secretion (*niryāsa*) of the tree Feronia Elephantum (*kapittha*) by adding certain amount of water. When prepared it should look like honey, neither thin as *svaccha*, nor thick as *medura*, that is why the name *madhya*. This and the other two varieties are meant to be added to the colours, hence these are different from the three gums (*jala*) — *svasṛta*, *svācala* and *saikata* (q.v.) which are prepared from the same substances, but differently and to be used for preparing the varieties of the *śarkarākalka*, 90.

madhya II, i.e. *madhyodara* as some times specified, i.e. loin, 38; 40; 41; 46.

madhyadeśa, as *madhya* II, q.v., 41.

madhyamadaśatāla-figure, the figure the total height of which measures ten *tālas*, i.e. 120 *aṅgulas*, (see *tāla* and *aṅgula*), 37; 40; 41; 61; 63.

madhyodara, same as *madhya* II (q.v.), i.e. loin, 38; 40; 41; 46; 46-n9; 61; 61-n2.

mahasī, (the description noted under *ghoṣiṇī* applies here too, but with reference to this name), 17.

māṃsa, flesh, 7; 8; 244.

mānāṅgula, an *aṅgula* of standard measurement, employed in architecture and in many other fields (see *aṅgula*), 36.

maṇibandha, wrist joint, 39; 55; 84.

mardinī, (the description noted under *gaganī* applies here too, but with reference to this name), 17.

mātrāṅgula, an *aṅgula*, a basic unit of measurement determined in terms of the middle digit of the middle finger of the performer (*yajamānin*) of the rites, and which is used in the construction of altars, etc., 36.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

mauktikamṛt,* literally mud of pearls, the real meaning of it is yet unknown, may be lime made of pearl-shells or even white earth, 92-n43.
maulidaṇḍa, component part of the armature employed inside the crown or headgear, etc., if any, for the strength or for the protection, 44-n5; 59; 59-n30; 73.
medas, fat, 7-9; 244; 261; 263.
meḍhramūla, synonym of *liṅgamūla*, q.v., 38.
medura (or *medurabandha*), literally thick, but it is the name of one of the three varieties of binding medium (the others being *svaccha* and *madhya* (q.v.), which should look like thin yoghurt, when prepared (for the rest of details (see *madhya* 1), 90.
miśrā, mixed soil, i.e. having the qualities of *jāṅgalā* (arid) and *anūpa* (damp) soils. Also this is the name of the clay obtained from such soil, 19; 19-n1, n2, n4; 20; 20-n4; 87.
mṛdaṅgī, one of the three ropes flowing into the left arm after splitting, along with the other two, into eight branches and which itself branches out, along with the other five, from the lower part of the rope called *suṣumnā*. Originally this is the name of a *nāḍī* (q.v.) the name which is adopted to the rope representing the said *nāḍī*, 17.
mṛdgarbha, polychromatic unbaked clay image, 98; 99; 104.
mṛṇmaya, usually it means unbaked clay image, but in certain contexts it also indicates polychromatic unbaked clay image, 96; 97.
mṛṇmayagarbha, the better form of which is *mṛdgarbha*, q.v., 98.
mṛṇmayā pratimā, unbaked clay image, 5.
mṛt, clay, 7-9; 19-n4; 23; 87; 228; 244.
mṛttikā, clay, 220; 220-n16.
mukha, in certain contexts it is a synonym of *tāla*, comprising of 12 *aṅgulas* (see *tāla* and *aṅgula*), 35-n1.

N

nābhi, navel or umbilicus, 38-41; 46; 68.
nāḍī, veins, arteries, and the kind, i.e. having the form of tube or cord as known in physiology, 13; 13-n2; 14; 14-n3; 15-17; 85; 85-n15; 243; 244; 258; 262.
nāha, circumference, 56-n26.
nāsānta, as *nāsikānta*, 40.
nāsikānta, lower edge of the bottom of the nose, 38; 39.
navatāla-figure, the figure the height of which measures nine *tālas*, q.v., 35-37; 37-n3; 203-n5.
nimna, cavity, 56-n27.

P

pādaśūla, as *talaśūla*, q.v., 59.
pādocca, height of the heel, 38; 39; 41.
pakvam, baked, 97-n7; 103-n27.
pakva-mṛṇmaya-pratimā, terracotta, 5; 97-n7.
pañcatāla-figure, the figure the height of which measures five *tālas*, q.v., 35.
pāṇḍu, § a variety of white, 92.
pāṇḍuvarṇa, a variety of white, 92; 93.
paṅka, slime, 19; 19-n4.
paramāṇu, atom, 36.
pariṇāha, as *nāha*, i.e. circumference, 18.
pārṣṇi, heel, 38; 39; 41; 52-n19.
pārśva, in the sense of *pārśvadaṇḍa*, q.v., 59.
pārśvadaṇḍa, the component part of the armature, representing all the ribs together, that lie on any one side, 43; 56; 56-n27, n28; 57; 61-n2; 66; 68; 76-78.
pārśvaśūla, synonym of *pārśvadaṇḍa*, 44.
paścimakeśāntarekhā, back hair-line (see *keśānta*), 38.
paṭa, cloth, 7-9; 30; 87; 244.
patra,* (93) one of the six modes of application of colour, viz. painting colour by moving the brush up and down, 92; 93.
piṅgalā, one of the three most important ropes flowing on the front surface of the *vaṃśadaṇḍa* (q.v.). Originally this is the name of a *nāḍī* (q.v.), the name which is adopted to the rope representing the said *nāḍī*, 16; 17; 80-83; 83-n10.
pīṭha, platform or altar, 66.
prabāhu, or *prakoṣṭha*, i.e. fore-arm, 39.
prabāhuśūla, as *prakoṣṭhaśūla*, q.v., 43.
prakoṣṭha, as *prabāhu*, i.e. fore-arm, 39; 40; 56; 59.
prakoṣṭhaśūla, or *prabāhuśūla*, i.e. a component of the armature, representing the bones of the fore-arm, viz. ulna and radius, 43; 44; 54; 54-n24; 55; 56; 59; 69.
pratiṣṭhā, permanent installation of the image.
pratyaṅgas, vehicles and emblems of the images of gods and goddesses, 88; 88-n24; 212.
pravarta or *pravartaka** (93), one of the six modes of applying the colour mixed with gold (or the powder of the precious stones)?, 92; 93.
pṛṣṭha, though normally it means back, here it indicates the buttocks, precisely speaking, the height of the buttocks in sitting posture, hence it is the same as the phrases: *āsanopari*, *āsanodaya* or *pṛṣṭhaphalaka*, q.v., 72-n24.
pṛṣṭhamadhya, central part of the back, 74; 74-n29.
pṛṣṭhaphalaka, it is the same as *pṛṣṭha*, *āsanopari and āsanodaya*, q.v., 72-n24.
pṛthvī, (the description noted under *ghoṣiṇī* applies here too, but with reference to this name), 17.
pūrṇā, one of the six ropes that branch out from the *iḍā* rope and that flow into the left leg. Originally this is the name of a *nāḍī* (q.v.), the name which is adopted to this rope representing the said *nāḍī*, 17.
pūrvakeśānta, front hair-line (see *keśānta*), 39; 40.
pūrvakeśāntarekhā, front hair-line (see *keśānta*), 38.
pūṣā, (the description noted under *alambuṣā* applies here too, but with reference to this name and, it reaches the area of right ear), 16; 80.

R

rajju, rope or cord, 7-9; 13; 16; 228; 244.
rajjubandha, literally, tying the ropes, i.e. the method of tying the ropes on armature, 80; 80-n3.
rasavādī, (the description noted under *mṛdaṅgī* applies here too, but with reference to this name), 17.
ratnagarta, the hole made in the base-stone (*ādhāraśilā*) of the *pīṭha*, plat-

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

form or altar to install the image permanently, and in which the precious stones also, by a custom or ritualistically, are placed; in the case of unbaked clay images the lower extension of the *vaṃśadaṇḍa* (q.v.) of the figure in sitting posture, or the lower extensions of the *jaṅghāśūlas* of a figure in standing posture are installed, and hence either one or two holes, as the case may be, are required, 67-n9.

ṛjukāya, straight body or figure in complete frontality, 76.

ṛjuśikhā, synonym of *avakraśikhā*, q.v., 43.

rodinī, (the description noted under *gaganī* applies here too, but with reference to this name), 17.

S

śabdaspṛśāṅgī, (the description noted under *pūrṇā* (q.v.) applies here too, but with reference to this name), 17.

sādhāraṇa, synonym of *miśrā* soil and clay (see the same), 19-n1.

ṣaḍvarṇa, × six modes of applying the colour, viz. *patra*, *hīra*, *bindu*, *sūpa*, *udvartana*, and *pravarta* (see under these names). There are two more readings in its place, viz. *ṣaḍvarga* and *ṣaṇmaṇḍa*, of all these, *ṣaḍvarga* seems to be the proper reading, 92-n45.

saikata × (*saikatajala*), name of one of the three varieties of the gums (the other two being *svasṛta* and *svācala* q.v.) prepared out of the dried secretion (*niryāsa*) of the tree, Feronia Elephantum (*kapittha*) by adding six times the amount of water. (This gum is used for the preparation of the *śarkarākalka*, q.v.), 27; 27-n11, n12; 28; 28-n14.

śaila, stone image, but in certain contexts it also implies the painted stone image, 96; 97.

samasthāna, natural, erect and frontal posture, 68.

saṃskāra, both preparation and employment of a given material, 9; 261.

saṅginī, (the description noted under *mṛdaṅgī* applies here too, but with reference to this name), 17.

śaṅkhacūrṇa, (92) powder or paste made of conch shell after burning it out (vide *śveta*), 91-n43; 92.

śaṅkhinī, (the description noted under *alambuṣā*, applies here too, but with reference to this name and, it reaches the point of navel), 16; 80.

saptasaṃskāras, seven-fold accomplishment, (a very difficult word to translate, hence the word, accomplishment is chosen to convey the sense of the compound, though the latter part of it, *saṃskāra* is differently explained above), 7.

saptatāla-figure, the figure the height of which measures seven *tālas* (q.v.), 35.

sāra, generally, essence, hence in relation to the coconut fibres, pure and clean fibres, while in connection with the timber, heart-wood should be understood by it. In an expression like *sāravṛkṣa* it implies the trees having plenty of heart-wood, 44.

śarkarā, same as *ghaṭiśarkarā*, q.v., i.e. lime stone (pebble), 24; 24-n1; 25; 25-n2; 26; 26-n6, n9; 27-29; 242; 242-n38.

śarkarākalka, (same as *ghaṭiśarkarākalka* q.v.) lime-stone-paste, i.e. a paste prepared from lime stone (pebble) in a given process, 7-10; 24-29; 87; 88; 88-n25; 89; 89-n26; 90-n30; 91; 91-n38, n39; 99; 99-n10; 100; 100-n17, n18; 101-104; 104-n30; 105; 146-n56; 148; 157; 190; 216; 223; 228; 230; 244.

śarkarāsāra, clear water obtained from the pots, in which *śarkarākalka* is preserved, 91-n38.

saṭtāla-figure, the figure the total height of which measures six *tālas*, q.v., 35.

śayana, reclining posture, 46-n10; 66; 71.

śayanopari, the space or height between the armature and the upper surface of the bed (see *anantordhva*, and a similar expression in the case of sitting posture is *āsanopari*, q.v.), 72-n24.

śayanordhva, same as *śayanopari*, q.v. (similar words in the case of sitting posture are *āsanodaya* and *āsanordhva*, p. 72-n24), 73-n26; 74-n29.

śayyāvedi, platform serving as the bed for keeping the components (*śūlas*) of the armature arranged in proper positions before installing and assembling it, 66.

śikhā, projecting part meant for joint, which is of two kinds, *vakraśikhā* and *avakraśikhā*, q.v., 43; 47-49; 49-n15; 51; 54-56; 56-n27; 57; 57-n28; 58; 59; 68; 69; 70-n18; 71-n22; 72; 74.

śilācūrṇa, stone-dust, 21-n11.

śilāgarbha, polychromatic stone image, 96; 97-n5; 98-101; 101-n20; 104.

śilpa, art and craft (skill), 16-n7; 19-n1.

sirā, in this field a synonym of *nāḍī*, q.v., 7; 8; 13; 13-n2; 14-n3; 15; 44; 262.

sita, a variety of white (as *śveta* or *śvetavarṇa*, q.v.), 92.

śoṇita, blood, 7; 8; 244; 261.

śoṣaṇa, season or seasoning (literally drying), 34.

sphuṭita, bubbled or cracked layers of colour or of ground of an image or of painting or of wall-painting, etc., 103.

sthānaka, standing posture, 46-n10; 66; 71.

sthaṇḍila, platform, 33.

sthapati, sculptor and modeller, 64; 68.

sudhā, according to the usage in technical treatises it always means stucco, but never simple lime of the kind used for white wash on walls, and similar purposes. But in general literature, i.e. non-technical literature, one may find certain usages in the latter sense also, i.e. lime, *cūrṇa*. The derivative of the term, *cūrṇa*, current in all the modern languages, though with slightly different spelling, is employed to indicate the stucco also. In spite of these two facts, the word *sudhā* must be preserved in its technical sense, for neither popular usages in Sanskrit nor the vernacular derivative of the term, *cūrṇa* are decisive here, hence no vagary of those to whom the original sources are inaccessible should be allowed to play, 28; 29; 69; 71-n23; 91-n38; 101; 242.

śūla, component part of the armature,

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

7-10; 30; 31; 33; 34; 34-n11; 35; 41; 42; 42-n1; 43; 44; 44-n5; 45; 46-n10; 47-n12; 48-50; 50-n16; 51; 53; 54-n24; 55-59; 59-n30; 61; 61-n2; 62-n3; 63; 63-n7; 64-66; 68; 68-n10, n11; 69; 69-n13; 70; 70-n18; 71-n23; 72; 74-76; 76-n32; 77; 78; 82; 83; 85; 104; 137; 138; 138-n47; 139; 189; 199; 228; 244; 263.

śūlalakṣaṇa, characteristics of the *śūlas* or the component parts of the armature, with special reference to their shape and measurements, or in short, process of preparation of the *śūlas*, 30; 42; 71-n23.

śūlapañjara, (a term coined newly by this author) the armature, 65; 66; 67-n9; 68; 69; 70-n18; 71; 75; 76; 76-n33; 77; 79; 80; 82; 85; 86; 203.

śūlasthāpanavidhi, assemblage of *śūlas* (q.v.) or the method of constructing the armature and its permanent installation in a given place, 64.

sūpa, × (93) name of one of the six modes of applying colour, viz. application of colour in points in smaller form than in *bindu* (q.v.) and in bigger form than in *udvartana* (q.v.), 92; 93.

susiṃhī, (the description noted under *pūrṇā* applies here too, but with reference to this name), 17; 17-n15.

suṣumnā, one of the three most important ropes flowing on the front surface of the *vaṃśadaṇḍa* (q.v.). Originally this is the name of a *nāḍī* (q.v.), the name which is adopted to the rope representing the said *nāḍī*, 13-n2; 16; 17; 80-85.

suvṛtta, well-rounded, 48.

svācala × (or *svācalajala*), similar as *saikata* (q.v.) but the difference is that here five and a half times the amount of water is added instead of six times (the third variety is *svasṛta*, q.v.), 27; 27-n12; 28; 28-n13, n14.

svaccha (or *svacchabandha*), literally thin or clear, but it is the name of one of the three varieties (other two being *madhya* and *medura*, q.v.) of binding medium. It is also prepared like *madhya* or *medura*, hence see the same. When prepared, it should, however, look like oil. The other two varieties are thicker than this, hence the name *svaccha*, clear, 90; 91.

svarṇacūrṇa,* gold dust (?), 93.

svarṇapiṣṭa, * literally gold paste, but it is a doubtful reading, 92-n42.

svasṛta × (or *svasṛtajala*), similar as *saikata* (q.v.), but the difference is that here five times the amount of water is added instead of six times (the third variety is *svācala*, q.v.), 27.

śveta, as *śvetavarṇa*, q.v., 92.

śvetavarṇa, a variety of white colour (perhaps the white prepared out of the *śaṅkha*, conch-shell, see *śaṅkha-cūrṇa*), 91; 92.

T

tāla, a unit of measurement, consisting of twelve *aṅgulas* (q.v.). In the field of image-making and figure-drawing the *tāla* is not a standard measurement, but a relative one, for its basic unit, viz. *aṅgula* is such, 35; 35-n1; 36; 37; 39; 41; 41-n8; 230.

tālamāna, the system of measurement by *tāla*. In the modern times it is wrongly explained to be iconometry or considered to be the synonym of iconometry or of *pratimālakṣaṇa*, but actually the iconometry is one aspect of the *pratimālakṣaṇa* (iconography) and the *tāla* system of measurement is employed in iconometry, which is a system that fixes the measurements of different icons or images, 35.

talaśūla, one of the component parts of the armature lying inside the foot and representing many of its bones, such as talus, calcaneum, navicular, cuboid, cuneiforms and to some extent metatarsals, 43; 51; 52; 52-n19, n21; 59; 69.

tāmasī, (the description noted under *pūrṇā* (q.v.) applies here too, but with reference to this name), 17.

tāmrapaṭṭa, copper plate, 57.

tejasī, (the description noted under *ghoṣiṇī* (q.v.) applies here too, but with reference to this name), 17.

tribhāga, one third part, 50-n18.

tribhakti, (*tribhaktyā*), in three coatings, 91.

tripāda, three fourth, 50-n18.

trivartikā, (rope) having three strands, 16.

tvak, skin, 7; 8; 244.

U

udvartana, × (93), name of one of the six modes of applying colour, viz. application of colour in smaller points than even in the *sūpa* (q.v.), in which the points are smaller than in the *bindu* (q.v.) variety, 92; 93.

upāṅga, ornaments, 88; 88-n24; 157; 212.

upaśūla, some times also called *ādhāra* as *ādhāraśūla* (q.v.) "support" holding the armature in position from the rear side in the standing or sitting postures, and from below in the reclining posture, thus it is not a component of the armature, yet is very essential, 43; 44; 58-60; 66; 66-n6; 68; 69; 71-73; 73-n27; 74; 75; 78; 81; 84; 139; 139-n51; 141; 142; 189; 199; 200; 202; 217; 224.

ūru, thigh, 38; 39; 41; 50; 59.

ūrumadhya, middle part of the thigh, 39; 40.

ūrumūla, beginning of the thigh, i.e. the part of the thigh falling on the line with the beginning of the genital organ (*liṅgamūla*), 39; 41.

ūruśūla, component part of the armature representing the bone of the thigh, viz. femur, 43; 44; 48; 49; 49-n16; 50; 50-n18; 51; 51-n19; 52-54; 54-n24; 55; 63-n8; 70-n18; 71-n22; 82; 83.

uṣṇīṣa, hair knot on the top of the skull or at times the highest point of the parietal bones, 38-40; 161-n68.

uttamadaśatāla, superior ten *tāla* measurement comprising 124 *aṅgulas*, (see *tāla* and *aṅgula*), 37; 39; 41; 44; 61; 63.

V

vāhinī, (the description noted under *pūrṇā* (q.v.) applies here too, but with reference to this name), 17; 17-n12.

vajrabandha, gelatine, 90.

vakra, (as *vakraśikhā*, q.v.), 48-n13.

vakrabimba, image having curves, 75; 76.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

vakraśikhā, curved projecting part meant for joint, 43; 48-n13.
vakṣodaṇḍa, component part of the armature lying across the chest, 42-44; 46-n10; 47; 47-n11; 48; 48-n14; 49; 49-n15; 55; 55-n24; 56; 56-n27; 57-59; 61-n2; 62; 62-n4, n5; 63-n17; 66; 68; 69; 70-n18; 71-n22; 73; 74; 77; 78; 81; 81-n8; 84; 189.
vaṃśadaṇḍa, also called *brahmadaṇḍa* (pron. *bramhadaṇḍa*), component part of the armature, representing vertebral column, 42; 45; 45-n7; 46; 46-n10; 47; 50; 51; 56; 56-n27, n28; 57; 57-n28; 58; 59; 61; 61-n2; 62-n3; 66; 68; 69; 71; 71-n23; 73; 74; 76-78; 80; 81; 81-n8; 82; 84; 138; 138-n48, n49; 139; 144-146; 152; 156; 157; 171; 189; 199.
varga, (see *ṣaḍvarṇā*), 92-n45.
vāridhāriṇī, (the description noted under *pūrṇā* (q.v.) applies here too, but with reference to this name), 17; 17-n45.
varṇa, colour, 7; 9; 30; 87; 92-n45; 244; 261.
varṇagarbha, × polychromatic image of any of the several media. (Another reading, *varṇalepana* is also found to convey the same sense. Either of these does not seem to be the proper term, the latter term is also used in its literal meaning, colour-coating), 96-n2; 98-n8.
varṇalepana, colour-coating, 93.
vartanā, the shading in painting that produces the sense of volume, 93-n46.
varti, twisted object or strand, 16.
vāyavī, (the description noted under *ghoṣiṇī* (q.v.) applies here too, but with reference to this name), 17.
vimalā, (the description noted under *ghoṣiṇī* (q.v.) applies here too, but with reference to this name), 17.
vyāsa, generally width, but at time used to imply diameter, 17.

Y

yaśasvinī, (the description noted under *alambuṣā*, applies here too, but with reference to this name and, it reaches the area of the left ear), 16; 80.
yava, (36) literally it means barley corn, but here technically it denotes one eighth fraction of *aṅgula*, as the latter (q.v.) is a relative basic unit of measurement in this branch of learning, *yava* also indicates the relative measurement, 16; 16-n7; 17; 18; 36; 39; 40-n6; 45; 50; 50-n18; 52-n21; 53-57; 59; 62-n6; 63-n7; 70; 83-n10; 88; 89; 99; 100; 100-n17.
the same term in abbreviation: *y* (=*yava*), 46; 48; 49; 51; 52; 58; 61; 62.
yoni, female genital organ, 41.

GLOSSARY B AND INDEX

Names of Trees in Sanskrit

A

agaru, Amyris Agallocha, 21.
āmraka, mango tree, 31.
arjuna, Terminalia Arjuna, 20; 31.
aśoka, Jonesia Asoka Roxb, 184.
aśvattha, Ficus Religiosa, 20.

B

bilva, Aegle Marmelos, 21; 22.

C

campaka, Michelia Campaka, 31.
candana, Santalum Album or sandal tree, 21; 31.

D

dāru, duramen or heart wood, 244; 263.

K

kapittha, Feronia Elephantum, 21; 22; 27; 28.
kāśa, Saccharum spontaneum, 212.
khadira, Acacia Catechu, 20; 31; 31-n2; 73.
kināṭa, cambium (not cork cambium), 244; 263.
kṣīravṛkṣas, four in number, viz. 1 Ficus Indica (*nyagrodha*), 2. Ficus Glomerata (*udumbara*), 3. Ficus Religiosa (*aśvattha*), and 4. Bassia Latifolia (*madhūka*), 20.
kūrca, Eragrostis Cynosuroides, 28; 89.
kuśa, Poa Cynosuroides, 89; 90-n30; 220; 220-n16; 221; 222; 227.
kuṣṭha, Costus speciosus or Costus arabicus, 21.
kuṭaja, Holarrhena Antidysenterica, or Wrightia zeylanica, 31.

M

madhūka, Bassia Latifolia, 20; 31.
majjā, resin or gum (see also General Index I), 244; 263.
mayūraka, Celosia cristata, 31.

N

nimba, Margosa or Melia azadirachta, 31-n2.
nyagrodha, Ficus Indica, 20.

P

padmaka, Prunus padum, 31.
parṇa, leaf, 244; 263.
phūlśolā (a Bengali word, see also General Index I) Aeschynomene aspera, 215.
pipal, (a Hindi word, Sanskrit *aśvattha*, see General Index I), Ficus Religiosa, 85; 86; 243.

R

rājatāla, Areca-nut tree, 31.
rājataru, Cathartocarpus Fistula or Pterospermum Acrifolium, 31.
raktacandana, Pterocarpus Santalinus, 31.
rasa, sap, 244; 263.

S

śāka, Tectona Grandis or teak, 31-n2.
śakara, alburnum or sap wood, 244; 263.
sāla, (or *śāla*) Vateria indica or white dammar, 31.
śamī, Prosopis Spicigera or Mimosa Suma, 31-n2.
saptaparṇa, Alstonia scholaris or Echites scholaris, 31.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

śiṃśupa, Dalbergia sissoo, 31.

T

tinduka, Diospyros embryopteris, 31.

U

udumbara, Ficus Glomerata, 20.
utpāṭikā, bark, 244; 263.

GLOSSARY C AND INDEX

NAMES OF PLANTS, SPICES AND OTHER SUBSTANCES RELATED TO THE UNBAKED CLAY TECHNIQUE

A

atasīkāṣṭha, linseed wood, 21.
atasīpatra, linseed leaves, 20.

D

dadhi, yoghurt, 21.

G

gairika, red chalk or red ochre, 12.
ghṛta, ghee or clarified butter, 12; 21.
godhūma, wheat, 21.
gorocana, bright yellow orpiment, 21.
guḍa molasses which are hardened by cooking 12.
guggula (or *gugulu*), exudation of Amyris Agallochum, 12; 20; 21.

H

haritāla, sulphuret of arsenic or yellow orpiment, 21.

J

jīrṇāśvatthapatravat, like dried leaf of Ficus Religiosa, 85; 85-n13.

K

kapitthaniryāsa, dried secretion of the Feronia Elephantum, 27-n11; 89; 90; 103; 230.
kārpāsatūla, cotton, 27; 27-n12; 190; 223.
karpūra, camphor, 21.
kṣīra, milk, 21.
kunduruṣka, the resin of the plant Olibanum (?), 12; 21.
kuṅkuma, saffron, 21; 22-n14.
kvātha or *kvāthatoya*, decoction, 20.

M

madhu, honey, 21.
madhūkatvak, bark of Bassia Latifolia, 22.
marīcī, pepper, 21; 28.
marīci-triphala, pepper and *triphalas* (which see below), 28; 28-n13.
māṣa, Phaseolus Radiatus, 20.

N

nārikelaphalapakvatvak, fibres of coconut fruit, 22.

P

palāśamukula, bud of Butea Frondosa, 48; 48-n14.
pippalī, long pepper, 21.

R

rajanī, Curcuma Longa, 21.

S

sarja (see *sarjarasa*), 12-n4.
sarjarasa, turpentine or resin of Vatica Robusta, 12; 21.
śrīveṣṭaka, resin of the Pinus Longifolia, 12; 21.
śuṇṭhi, dry ginger, 21.

T

taila, oil extracted from the sesame seeds, 12; 21; 214.
triphala, myrobalans, as the fruits of the Terminalia Chebula, Terminalia Bellerica and Phylanthus Emblica, 20; 21; 26; 28; 91-n39.

Y

yava, barley corn, 21.

GENERAL INDEX I

Words of the Languages Other than English

Unless considered to be important, neither the variants of the readings discussed in the footnotes nor the individual words from the quoted verses and phrases are included here.

Indian Languages

SANSKRIT

This contains the general words which are not included in Glossaries

A

ābhicārika, 5-n21.
adhama, 37.
adhyātma, 260; 260-n6.
ahitā, 14; 14-n3; 15.
aiṣṭakam, 97-n7.
amara, 229-n6.
amāvāsyā, 193.
aṃśa, 12.
ārambhika, 220.
arhat, 229.
asaṅkula, 66.
aṣṭamaṅgalas, 103.
asthiyantra, 65-n4.
asura, 195.
āśvayuja, 193.
ātman, 260-n6.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

B

bahuvrīhi, 97-n5.
bāhyaśarīra, 220.
bhāvanā, 9.

C

caitya, 32; 116-n18; 225-n3.
caṇḍāla, 32.
carman, 261; 262.
caturabhrū, 186.
catuścatvāriṃśat, 18-n21.
catuṣṣaṣṭi, 18-n21.

D

dagdhān, 103-n27.
deśa, 19-n1, n2.
deva, 159.
devatā, 138-n17; 152; 159.
devī, 198.
devīnavarātra, 193.
dhamanī, 13; 13-n2; 14-n3; 15.
dhānya, 66.
dharmacakrapravartanā, 252.
dīpāvalī, 193.
dīrghikā, 26.
durgāpūjā, 193; 194; 214.

G

gaṇḍa, 186.
gaṅgā, 210.
garbha, 97-n5; 259.
garte, 19-n3.
gāthā, 14; 15.
ghana, 17; 18.
gharma, 214.
ghaṭ, 25.
ghaṭi, 25-n2.
gopura, 23-n18.
guṇa, 27-n11.

H

halasthala, 22.
hastapaddaṇḍayogārtha, 48.
hitā, 14; 14-n3; 15.
hṛdaya, 243.

I

iṣṭakā, 242-n38.
iṣṭakayaiva, 97-n7.

J

jainadharma, 246-n1.
jainamata, 246-n1.
jala, 27-n11.
jātaka, 24-n1.
jñānendriya, 261.

K

kālīpūjā, 193.
kaṅkaṇa, 159.
karkara, 25-n2.
kāṣṭha, 64-n3; 65-n3.
kāṣṭhakarma, 65-n3.
kāṣṭhamaya, 65-n3.
kāṣṭhamūla, 65-n3.
keśa, 261.
kośa, 15.
krama, 94-n49.
kṛśana, 22-n15.
kṛṣṇamṛt, 19-n3.
kṣaṇika, 217-n8.
kṣaudra, 12.
kulīrāvāsa, 22.
kumbhakāra, 215.

L

lākṣā, 20-n8.
lakṣaṇa, 64.
lakṣya, 64.
lāvaṇya, 214.
lepa, 239; 240.
lepana, 262.
lepyacitra, (see also Glossary A), 240.
loma, 244; 263.
loman, 260; 261.

M

madhyama, 37.
māgha, 193.
mahāparinirvāṇa, 252.
mahāpuruṣalakṣaṇa, 261.
mahāyāna, 238.
majjā, (see also Glossary A), 244; 245; 261; 263.
māṃsa, (see also Glossary A), 260; 263.
māṃsapiṇḍa, 243.
mandāgni, 12.
maṇḍala, 198.
manohara, 20.
mantra, 6; 9.
māravijaya, 252.
mardayet, 20.
māsa, 21.
medas, (see also Glossary A), 262.
mithuna, 256-n29.
mṛta, 229-n6.
mṛtasaṃjñā, 229-n6.
mṛtsaṃjñā, 229-n6.

N

nāla, 14; 69.
narhī, 14; 262.
navarātra, 193.
nepathya, 239.
nindā, 260-n10.
niryāsa, 27-n11; 28-n13.

P

pakṣadaṇḍa, 42-n3.
pañcaguṇa, 27-n11.
pañcakośa, 15.
pañcāṃśam, 27-n11.
pāñcarātra, 227.
pāṣāṇa, 23-n18.
patacitra, 240.
pātra, 20.
peṣaṇī, 26; 26-n9.
piṇḍatā, 20.
plota, 103-n28.
plotavastra, 103.
pratipat, 193.
prāyascittaprakaraṇa, 98-n17.
prāyaścittavidhi, 76-n33.
pūjā, 193.
puṇyakṣetra, 26-n6.
pusta, 226-n4; 239; 241.
pustaka, 239.

R

rajata, 22; 22-n15.
ratnanyāsa, 67-n9.
ratnavedi, 67-n9.
roman, 261.
rūḍha, 65-n3.
rudhira, 244; 261; 263.

S

ṣaḍguṇa, 27-n11.
ṣaḍvarga, 92-n45.
śaiva, 2; 4; 73; 96; 98.
śākta, 15.
saṃjñā, 229.
sāra, 13.
sarasvatīpūjā, 193.
śarāva, 237.
sarṣapāstaraṇa, 93.
saśyamūla, 22.
śaubhika, 106-n33; 240-n30.
śikhā, 45.
śilāpṛṣṭha, 26.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

sīmanta, 186.
śloka, 263.
snāvan, 244; 260; 262; 263.
snāyu, 14; 262; 262-n15.
snāyurajju, 262-n15.
śoṇita, 259; 262.
śr, 25-n2.
sruva, 56.
sthānīya, 220-n16.
sthūṇa, 262; 262-n15.
stūpa, 114; 115; 116-n18; 118; 119; 122; 133-n36; 225; 225-n3; 226.
śuddha, 20.
śuddhajalaja, 26-n26.
sudhayaiva, 98-n7.
sudṛḍha, 26.
sūkṣmacchavi, 261.
suvarṇa, 22-n15; 93-n47.
sva, 260-n6.
svacchajala, 28-n14.
svarṇa, 22; 22-n15; 93-n47.
svarṇacūrṇa, 93-n47.

T

tāmra, 99.
tāmranālasamāyutam, 73-n27.
taṭāka, 20; 26.
tātkālika, 217-n8.
triphalodaka, 26-n10.
triśūla, 212.
tvac, 262.
tvak, 263.

U

upamā, 260-n10.
uttama, 37.

V

vaikhānasa, 3; 4; 96-98; 98-n8; 224.
vaiṣṇava, 73; 97; 98; 98-n7.
vajrayāna, 15.
vakṣas, 59.
valmīka, 22.
vara, 14-n3.
varṇita, 107.
vastu, 227-n5.
vedi, 66.
vihāra, 122.
vijayadaśamī, 193.
vimānapratiṣṭhā, 4-n17.
viṇā, 212.
vyāla, 32.

Y

yaugika, 65-n3.

PALI

aṭṭhi, 260.
aṭṭhimiñja, 260; 261.
camma, 260.
cetia, 226.
chavi, 244; 260-262.
lomakāya, 261.
nahāru, 260-n9; 262.
nhāru, 260; 260-n9; 262.
paṭhavīkāyam, 261-n13.
pottha, 226-n4; 239.
potthārūpa, 226.
rudhirakāya, 261.
sakkhara, 24-n1.
sukhumacchavi, 261.
taca, 262.

Modern Indian Languages

The Words Commonly Used in Many Northern Indian Languages

cīnī, (also used in the South at times), 24.
dhotī, 169; 169-n92.
divālī, 193.
kaṅkaḍ, 25-n2.
kāṭh, 64-n3.
nīl, 214.
pūjārī, (also used in the South) 247.
pūthi, 239.
śakkar, 24.

BENGALI

bijayā, 193.
bisarjana, 193.
ḍāker kāj, 215.
ghām, 214.
ghām-tel, 214.
guṭiṅ, 25-n2.
kāṅkaḍ, 25-n2.
kāṭha, 65-n3.
kāṭhām, 64-n3; 65-n3; 202; 216.
kāṭhāmo, 64-n3; 65-n3; 202; 203; 216.
kāṭh-kām, 65-n3.
khaḍi, 213.
kumār, 215.
mer, 203; 208.
paṭuā, 194; 216.
phena, 214.
phūlśolā, (see Glossary B), 215.
sārbajanīnapūjā, 196-n3.
śolā, (as *phūlśolā*), 215.
sūtradhāra, 196-n3; 216.
tel, 214.
ṭhāṭ, 203.

HINDI

daśharā, 193.
kāṭhī, 64-n3.
pipal, (see Glossary B), 85; 86; 243.

TAMIL

kaḍiśarkarā, 25-n2; 29; 102.

TELUGU

cakkera, 24.
dasarā, 193.
kaṅkara, 25-n2.
muccīlu, 108.

Words of Non-Indian Languages

ARABIC

sukkar, 24.

CHINESE

ming-chi, 235-n24.
ying-mu, 228.

FRENCH

appliquée, 157; 159; 161; 186; 213.
bleu, 164-n73; 166-n77; 168-n86; 169-n92.
— pale, 169-n93.
bois, 137-n46; 138-n48.
bordure, 168-n86.
couche broute, 146-47-n56.
couleur, 169-n92.
crinière, 164-n73.
École, 146-n56.
enduit, 164-n73.
esprit général, 253.
globe, 168-n86.
goujon, 138-n48.
grisâtre, 164-n73.
jaune, 166-n77.
Jaunâtre, 164-n73.
Louvre, 146-n56.
modelage, 137-n46; 138-n48.
Notre Dame, 123.
oculaire, 168-n86.
oeil, 168-n86.
oreilles, 166-n77.
ossature, 137-n46.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

paupière, 168-n86.
peintue, 166-n77.
polichromie, 164-n73.
rose, 166-n77.
—vieux, 164-n73; 166-n77; 169-n90.
rouge, 166-n77; 168-n86; 169-n93.
rougeâtre, 169-n92.
—brique, 169-n90.
sucre, 24.
teint, 169-n92.
terre, 138-n48.
terre crue, 110; 137-n46.
tête, 138-n48; 164-n73.
trace, 164-n73.
verte, 169-n93.

GERMAN

buddhistische, 124.
Grabdenkmäler, 237.
Handlung, 200.
Hauptanlage, 144-n53.
Laternen-Decke, 126.
Lehm, 225; 225-n3; 226.
Lehmplastik, 109; 112.
Mittelasien, 124.
Proportionslehre, 73-n33.
Scheitel, 186.
Spätantike, 124.
Spielbein, 200.
Standbein, 200.
Statuen, 225-n3.
Statuen-Höhle, 119.
Ton, 225-n3.
Zucker, 24.

GREEK
(Ancient)

Κα′νναβος, 232; 233; 233-n17.
Κα′νναβος, 232.
Κα′νναβος, 232.
sakkharon, 24.

ITALIAN

grezo, 146-n56.
strato grezzio, 146-n56.

LATIN

alae, 154-n61; 186.
crux, 232; 233.
lapis lazuli, 125; 165-n76; 168; 169.
sanctum sanctorum, 5; 67; 67-n8, n9.
sectio aurea, 37-n3.
stipes, 232.

RUSSIAN

сахар (pron. sākhar), 24.

GENERAL INDEX II

This comprises the selected words, the selection is made in view of the main theme, the unbaked clay technique. But for special considerations, the words are generally noted in nominative singular, irrespective of the question in which case and number they are actually found in the text.

A

abdomen, 138-n49; 202; 203.
adhesive, 160.
Afghan, 124; 128; 189.
alabaster, 107.
Alexandrian, 113; 122.
altar, 66; 67; 67-n8, n9.
anatomical, 8; 243; 257; 259.
anatomists, 72.
anatomy, 13-n2; 14; 15; 16-n7; 35-37; 37-n3; 61; 77; 152; 230; 258; 260.
ankle, 38; 39; 51-53; 70; 70-n18; 75; 82-84.
antique, 123.
application, 87-n20; 88; 88-n25; 89; 89-n26; 90-n31; 160; 165; 174; 191; 210; 214; 230.
Arabic, 24.
archaeological, 1; 106; 109; 119; 128-130; 136; 137; 141; 142; 146; 146-n55; 149; 150; 152; 155; 164-n73; 168-170; 175; 177; 188-191; 210; 222-225; 229; 234; 239.
—semi, 226.
archaeologist, 1; 110; 112; 118; 128-130; 133-n36; 135; 141; 143; 145; 146; 146-n55; 147; 151; 166-168; 171; 188; 189; 209; 217; 223; 229.
—French, 110; 113; 165.
—Indian, 109.
archaeology, 2; 110; 113; 138.
—Indian, 110; 112.
arid, 19.
arm, 38; 48; 49-n15; 53-n23; 59; 68; 69; 71-n22; 72; 74; 75; 78; 83-85; 88-n24; 131; 137; 138-n47; 140-n51[a]; 151; 158-n65; 189; 195; 197; 198; 200; 201; 203; 210; 223.
—lower, 43.
—upper, 43; 138-n47; 202; 213; 251; 252.
armature, 7; 10; 16-18; 30; 31; 35; 41; 42; 44; 47; 47-n12; 49-n16; 51; 53; 60; 61; 63; 63-n8; 64; 64-n3; 65; 65-n3; 66; 66-n6; 67; 70-n18; 71-73; 73-n26; 74-76; 76-n33; 77; 80; 81; 81-n8; 82; 85; 85-n15; 86; 87; 105; 137-n46; 138-n47; 139-142; 145; 151; 155; 171; 189; 190; 202; 203; 216; 217; 222; 223; 230; 233; 243.
—wooden, 5; 96; 137; 137-n46; 140; 140-n51[a]; 143-145; 229.
armpit, 38; 57; 158-n65; 179-n106.
—right, 254; 255; 255-n26.
art, 1-3; 10; 33-n10; 65; 95; 101; 106-n33; 112; 113; 121; 121-n27; 122-128; 130; 132; 133-n36; 134; 147-n56; 176; 180; 188-n120; 193; 194; 196-n3; 198; 205; 207-n6; 209; 215; 216; 224; 230; 234; 236; 237; 240-n30; 242.
—Buddhist, 118; 247.
—of Central Asia, 124; 255-n26.
—Central Asian, 125; 127; 146-n56; 179; 179-n106.
—centres, 96.
—Christian, 233.
—circles, 11-n1.
—Dutch, 125.
—European, 123; 182.
—Gandhāran, 123; 127; 128; 133; 170-n95; 178; 247.
—graphic, 37.
—Greek, 123; 231-n8.
—Greek and Roman, 231-n9.
—Hellenistic, 154.
—history of Indian, 253.
—Indian, 109; 110; 113-n8; 125; 127;

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

170-n95; 182; 240; 246; 247.
— Indian theory of, 68.
— Italian, 125.
— Kucān, 124; 124-n29; 179-n106.
— modern, 198.
— plastic, 37.
— Roman, 123; 125.
— Tarimian, 112; 113; 119; 154; 163.
artery, 7; 13; 14; 14-n3; 15.
artist, 1; 7-9; 16; 22-n15; 30; 35; 37; 76; 77; 83; 85; 105; 110; 117; 122; 134; 154; 160; 163; 164; 179-n107; 183; 186; 193; 194; 196-n3; 203-n5; 205; 207; 207-n6; 214-216; 224; 230; 232; 234; 236; 253; 254; 255-n26.
— ancient, 65; 103.
— Akhnur, 160.
— Central Asian, 205.
— Dutch, 125.
— Gandhāran, 121-n27; 180.
— Greek, 122.
— Indo-Afghan, 121-n27; 155.
— Kāśmīrian, 121-n27.
— Roman, 122; 125.
— Venician, 147-n56.
— of the West, 37-n3.
artistic, 126; 155.
— activity, 9.
— sphere, 9.
ash, 205; 206; 213.
Asian, 123.
assemblage, 64-66; 68; 70-n18; 75.
assembling, 77.
assembly, 50; 70-72.
asymmetrical, 254.
aureole, 197; 215.
axis, 255.

B

back, 43; 65-n3; 72-n24; 74; 80; 139; 141; 142; 197; 198; 200-202; 217; 218; 255.
— of the *talaśūla*, 52-n21.
back-frame, 195; 196; 196-n3; 197-200; 202; 209-n7; 217; 219.
baked, 5-n21; 109; 111; 114; 115; 118; 131-n32; 132; 133; 135; 155; 169-n91; 171; 172; 181; 215; 237.
— half, 117; 181.
— ill, 117; 181.
baking, 117; 118; 142; 144; 170; 173; 174.
balls, 20; 20-n10; 26-28; 168-n86.
— eye, 168.
bamboo, 64-n3; 65-n3; 143; 157; 195; 196; 196-n3; 200; 202-205; 208; 209; 212; 216; 217; 222; 239.
bark, 244; 263.
Baroque, 182; 188-n120.
base, 202.
— wooden, 232; 233.
basement, 196.
base frame, 209-n7.
base-stone, 67.
beard, 89-n30; 90-n30.
bend, 53; 58; 71-n22; 75; 85; 199; 202.
Bengali, 25-n2; 64-n3; 193; 196-n3; 202; 213-215; 218-n9.
binding, 136; 151; 165.
black, 167; 167-n84; 168.
blades
— shoulder, 199-201.
block, 137.
blood, 7; 15; 244; 259; 261-263.
blue, 125; 166; 166-n79; 168; 169; 169-n90.
board, 197; 206.
— wooden, 204.
bodily, 152; 153; 156; 163; 167; 181; 185; 190; 258; 260.
body, 36; 40-n6; 51; 58; 59; 64-n3; 66; 71; 72; 75; 76-n33; 82; 86-88; 88-n24; 89; 105; 111; 116-118; 137; 150; 152; 153; 155; 158; 159; 167; 169; 171; 172; 173; 175; 176; 187; 201; 202-205; 208; 210-212; 218; 220; 220-n16; 228; 230; 238; 243; 245; 247; 250-n11; 253; 254; 257; 258; 260; 260-n6; 261; 262.
— adult, 36; 37.
— human, 8; 30; 35; 60; 154; 244; 250; 259; 262; 262-n15; 263; 264.
— living, 64-n3; 77; 78; 245.
— lower, 166.
— male, 39.
— region of the, 42.
— upper, 78; 166.
— upper half of the, 45; 45-n7; 255.
bone, 7; 8; 38; 43; 58; 65; 77; 160; 228; 244; 259; 260; 262; 263.
book
— mythological, 37.
— sourse, 3; 6; 19-n1; 24-n1; 146-n56; 157; 189; 199; 241.
borders, 153; 157; 158.
Brāhmaṇas, 258; 258-n1.
Brahmanical, 98; 107.
brick, 67; 91-n37; 97; 97-n7; 98; 98-n7; 101; 101-n20; 106; 242-n38.
— burnt, 101; 192; 196-n3.
brick-and-stucco, 97; 98; 98-n7; 101; 102; 104-n30; 105; 106.
bronze, 5; 95; 99; 250-n11.
brows, 167; 167-n84; 180-n110; 186.
brush, 92; 93; 159; 213.
— flat, 211.
buble, 103.
Buddhism, 15; 114; 122; 219; 226; 235-237.
Buddhist, 116; 118; 119; 122; 132; 160; 225; 229; 237; 238; 240; 243; 247; 258; 259; 262; 263.
building, 150; 174.
building up
— principle of, 137.
bulk, 143; 145; 150; 160; 161; 161-n68; 162; 163.
bust, 166-n79.
butterflies, 86.
buttocks, 72; 72-n24; 74-n29; 138; 139.
Byzantine, 37-n3.

C

calf, 39; 202.
carpenter, 216.
carpentry, 216.
carving, 147-n56.
— principle of, 136.
— stone, 192-n1.
cast, 154; 156; 159; 159-n66; 160; 161; 161-n68; 162; 164; 204; 206; 207; 210; 212; 213; 218; 223.
casting, 154-157; 159; 162; 204: 205; 208.
cavity, 144-n53; 206; 207; 211.
Central Asian, 2-n3; 90-n30; 112; 113; 115; 125-127; 138; 144; 146-n56; 147; 155; 179; 179-n106; 190; 205; 231; 234; 235; 255-n26.
Central Asians, 126.
Ceylonese, 226.
chaff, 146-n55; 173; 208.
chalk, 213.
chest, 62; 62-n4; 63; 78; 79; 85-87; 139; 139-n51; 140-n51[a]; 179-n106; 201; 202; 209; 232; 243.
— female, 247.
chin, 35-n1; 38; 82; 152; 184; 187.
Chinese, 124; 124-n29; 192-n2; 225-n3; 226-n3; 227-n5; 228; 228-n5;

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

235; 235-n24; 236-n24.
chronological, 126; 127; 225; 225-n2; 247.
chronology, 129; 225; 246.
circuits, 84.
classical, 123.
clay, 5; 5-n21; 6; 7; 9; 10; 20; 20-n6; 21; 21-n12; 22; 22-n15; 23; 23-n18; 25-n2; 26-n6; 29; 51; 54; 54-n24; 57; 64; 64-n3; 65-n3; 67; 70; 70-n18; 77-80; 80-n1; 81-n8; 82; 86; 86-n16; 87; 87-n18, n20; 88; 90-n30; 94-96; 96-n3, n4; 97-99; 100-n13, n15, n16; 102-106; 109-113; 113-n8; 114; 116-121; 127; 129; 129-n31; 130; 130-n31; 131; 131-n32, n33; 132-n36; 133; 133-n36; 134; 135; 135-n40; 136; 137-140; 140-n51[a]; 141-146; 146-n55, n56; 147; 147-n56; 148-154; 154-n61; 155; 156; 158; 159; 161; 161-n68; 162-164; 164-n73; 165-167; 169; 171; 171-n97; 172-174; 176-179; 182-184; 187; 188; 190-192; 192-n1, n2; 193-195; 203-209; 209-n7; 210-213; 215; 217-219; 219-n13; 220; 220-n16; 221-226; 226-n3, n4; 227-230; 230-n7; 231; 231-n9, n10; 232-235; 235-n22, n24; 236; 236-n24; 237-239; 241-245; 259; 261-264.
— baked, 132.
— burnt, 131-n32.
— first, 208.
— friable, 152.
— liquid, 160; 162.
— potter's, 19-n3; 211-213.
— reddish, 149.
— second, 210.
— sun-dried, 135; 135-n40.
— third, 211.
— unbaked, 1; 5; 129-n31; 132; 135; 140; 141; 170; 173-175; 179; 181; 185; 206; 212; 216; 225; 225-n3; 226.
— unburnt, 120.
— varieties, 19; 19-n4; 146.
cloth, 7; 10; 30; 66; 80-n1; 87; 89; 89-n26, n28; 90; 96-n4; 99; 100; 100-n13, n15, n16; 101; 103; 103-n28; 104; 104-n30; 105; 158; 190; 191; 205; 211-213; 216; 239; 244; 247; 249-n9; 253.
coat, 102; 146-n56; 153; 154-n61; 158; 162; 164; 167; 174; 176; 176-n102; 204; 209; 210; 223; 240.
— clay, 143; 228.
— greyish, 164-n73.
— yellowish, 164-n73.
coating, 27; 27-n12; 28; 28-n13; 87-89; 91; 91-n38, n39; 92-94; 100; 100-n15; 101-103; 146; 149; 152; 153; 165; 190; 208; 210; 214; 239-242; 262.
— final, 93-n47; 167.
— underlying, 167.
— white, 103.
coconut, 13; 22; 148; 190; 230.
coconut water, 21.
collections
— Pelliot's, 161-n68.
— Stein's, 161-n68.
colour, 7-10; 30; 87; 89; 90; 90-n31; 91; 92-n45; 93-95; 96-n2; 99-102; 104; 104-n31; 105-107; 117; 125; 146; 164-n73; 165; 165-n75; 166; 166-n77, n79; 167; 168-n88; 169; 169-n92; 191; 213-216; 230; 240; 244; 245; 260-262.
— basic, 30.
— brilliant, 93-n47.
— final, 167.
— general, 169.
— mixed, 30; 93-n47.
— six manners of applying, 93-n46.
— underlying, 167.
— unsuitable or undesired, 103.
— white, 92; 166.
coloured, 192-n1; 249-n9.
colouring, 99; 102; 102-n25; 103; 105; 107; 108; 164-166; 192-n2; 212; 213.
column
— vertical, 42; 45; 75; 78; 144; 152.
component, 77; 78.
composition, 195; 197-199; 223.
— figural, 198.
compositional, 199.
concave, 250.
conch, 22-n15.
— shell, 92.
cone-shaped, 163.
construction, 64; 71; 75; 77; 79; 196; 198; 199; 233-n17.
convex, 179-n106; 247; 250; 251; 256.
copper, 43; 57-59; 69; 70; 70-n17, n18, n19; 71; 71-n22; 73; 73-n27; 76-n33; 79; 88; 183-n114; 211; 230-n7.
cord, 7; 175; 176; 210.
— vertebral, 13-n2.
core, 65-n3; 106; 111; 136; 137; 141; 142; 145; 146; 148; 149; 150-153; 156; 158; 162; 171; 174; 185; 198-200; 204; 208; 209-n7; 210; 219-222; 227; 230-n7; 234.
— clay, 113; 117.
— rock, 176-n102.
— stone, 144; 144-n53; 176.
— straw, 201; 202; 208; 209; 236-n24.
— wooden, 232.
cork wood, 215.
cotton, 27; 85-n15; 146; 146-n56; 147-149; 190; 223.
cracks, 88; 89; 103; 208; 210.
crown, 59; 73; 74; 95; 138; 144; 156; 160; 209.
curve, 75; 76; 179-n106; 184; 186; 202; 233-n17.
cuticle, 260; 262.
cutting, 137; 158.
— principle, 136.
cylindrical, 179-n106.

D

damp, 19.
decoction, 20-22; 91-n39.
decoration, 192; 215.
— figural, 120.
deity, 4-n15; 5; 48; 59; 73; 74-n29; 84; 195; 198; 200; 201; 218; 219; 252.
— Hindu, 78.
— Indian, 78.
— main, 67-n9; 96; 97.
deltoid, 151.
density, 214.
design, 193-195; 197; 202; 207; 209-n7; 223; 232.
development, 222; 224; 225; 234; 236-n24; 238; 243; 249; 254; 255; 257; 258; 260.
dimensions, 53; 66; 78; 131; 139-n51; 144; 150; 182; 238; 247; 257.
dimensional, 218.
dome-like, 161; 161-n68.
double-chin, 156; 187.
dowel, 138; 138-n48; 139; 139-n51; 141-144; 156; 157; 171; 172; 189; 199; 204; 207; 208; 209-n7; 210.
— wooden, 137; 145.
drapery, 100; 122; 145; 153; 158; 175-177; 179; 179-n106; 211; 247; 250; 250-n11; 251; 253; 254; 255-n26; 256.
— treatment of, 246; 248.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

drawing, 256-n29.
— rough, 232.
dried secretion, 21; 22; 28.
driving, 143; 208.
dust
— gold, 93-n47.
— gold and silver, 214.
— iron, 23.
— stone, 21; 23.
Dutch, 125.

E

ear, 43; 57; 58; 70; 70-n19; 82; 87; 88; 155-158; 160; 184; 187; 204; 205; 207; 211; 212.
— folds of the, 168.
— right, 80.
earth, 19-n4; 22; 22-n15; 75; 109; 146; 165; 208; 214.
— crude, 147-n56.
— white, 92-n43; 213.
edge, 78; 248; 249; 249-n9; 255.
Egyptian, 230-n7.
elbow, 53-n23; 54; 71-n22; 75.
element, 195; 197; 199; 200; 217; 220.
— binding, 90.
enamels, 240.
encircling, 85.
English, 24; 37-n3; 101; 109; 110; 112; 137-n46; 179-n106; 186; 215; 218; 225-n3; 226-n3.
equilibrium, 66-n6; 70-n18.
era
— christian, 14; 105; 109; 181; 228; 234; 263.
erection, 72.
Etruscans, 231-n10.
European, 24; 112; 123; 125; 182; 254.
Europeans, 109.
excavation, 187; 188.
exudation, 21.
eye, 76-n33; 80; 82; 87; 88-n24; 95; 153; 158; 168; 180-n110; 184; 186; 207; 253.
— tear or inner corners of the, 38.
eyebrow, 80; 81; 95; 105; 153; 180-n110; 186.
eyelid, 105; 137; 153.
— fold of the, 168-n86.
eye-opening 95; 136.

F

face, 35-n1; 155; 156; 158; 160; 166-n81; 167; 186; 207; 212; 230-n7.
Far Eastern, 234.
fascia, 8.
fat, 7; 9; 245; 259; 261; 262.
feature, 105; 111; 137; 143; 149; 151-153; 156; 158; 164; 165; 170; 173; 175; 177; 179; 179-n106, n107; 181-184; 184-n114; 186; 187; 204-207; 215; 218; 230; 234; 248; 251-n16.
— bodily, 144; 185.
— realistic, 253.
feet, 57; 58; 67; 69; 70; 70-n17, n18; 74; 95; 230-n7.
female, 62-n3; 158; 195; 247; 256-n29.
fibre, 13; 83.
— chopped coconut, 148.
— coconut, 145; 190.
— of plants, 147.
fibrous, 149; 164.
figural, 116; 192; 198; 231; 234.
figure, 4; 5-n21; 10; 23-n18; 35; 35-n1; 36; 37; 37-n3; 38; 41; 44; 45; 51; 57; 65-n3; 66; 69; 74; 76; 79; 81; 94; 95; 100; 100-n17; 101-n20; 102; 104; 106; 109; 111; 116; 117; 128; 129; 130-n31; 131; 131-n33; 132-n36; 133-n36; 136; 137-n46; 138; 138-n47; 143; 145; 149; 154; 157; 163; 165-n75; 166; 166-n77, n79; 167; 168-n86; 169; 169-n91; 171-173; 178; 179; 181-188; 190; 191; 195; 196-n3; 197; 199; 200; 208; 213; 214; 217; 217-n8; 218; 221; 229; 232; 233; 233-n17; 237; 238; 247-250; 250-n12; 251; 252; 254; 255.
— Ahicchatrā, 186.
— Akhnur, 174; 184.
— baked clay, 5; 109.
— Buddha, 151; 161.
— canvas, 111.
— Central Asian clay, 190.
— Clay, 1; 5; 67; 96; 99; 100-n13, n16; 102; 105; 106; 109; 110; 112; 113; 113-n9; 131-n32, n33; 140; 146; 150; 161-n68; 163; 166; 171; 171-n97; 190; 192; 229; 231; 236-n24; 239; 241-244; 261; 263.
— colossal, 131-n32.
— female, 33; 39; 40; 41; 61; 62; 62-n3; 63; 63-n7; 158; 159; 166; 247.
— Fondukistan, 187.
— human, 35; 162; 235-n24.
— larger, 135.
— Lehm, 225-n3.
— Lucknow clay, 192-n2.
— male, 33; 39; 61; 61-n2; 62; 62-n3; 63; 63-n7; 167.
— nude, 246.
— paper, 111.
— painted, 249-n9.
— polychromatic, 97; 98.
— reclining, 46; 73; 75.
— round, 137; 152.
— sepulchral, 192-n2; 236-n24.
— sitting Buddha, 144.
— small, 117; 135; 139-n51; 159.
— standing, 46; 67; 71; 72.
— stone, 142.
— stucco, 101; 106; 131-n32; 176.
— terracotta, 174.
— unbaked, 117.
— unbaked clay, 5; 6; 109; 110; 112; 113; 113-n8; 118; 129; 130-n31; 133-n36; 137; 143.
— Ushkar, 172; 181-n110.
— wall, 111.
— wooden, 101.
figurine, 109; 132; 155.
figure-drawing, 36.
finger, 39; 58; 138; 158; 162; 211-213.
— middle, 35.
flame, 162; 162-n70.
flesh, 7; 220-n16; 228; 244; 245; 259-263.
fold, 145; 153; 158; 158-n65; 168; 168-n86; 169; 169-n92; 175-177; 179-n106; 247; 247-n2; 250-255; 255-n26; 256; 256-n29.
— treatment of, 246.
foot, 40; 52; 195.
— of copper, 230-n7.
forearm, 39; 69; 138-n47; 140-n51[a].
forehead, 153; 157; 158; 161; 162; 184; 186; 206; 207.
form, 46; 48-n13; 49; 51; 55; 72; 77; 78; 80; 81; 83-n9; 84; 121; 122; 139; 141-143; 145; 149; 153; 155; 156; 158; 159; 159-n66; 160-163; 172; 174-177; 179-n106; 195; 196; 200-202; 204; 208; 214; 223; 228; 233; 247; 247-n2; 250-254.
— adult, 37.
— broad muscular, 232.
— octagonal, 46.
— profile, 247; 247-n2.
— reversal, 256.
— round, 46.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

— square, 46; 46-n10.
frame, 64-n3; 65-n3; 66; 68; 69; 72; 77; 78; 101; 137; 139; 195-200; 202; 203; 209-n7; 217; 218.
— basic, 69; 71; 76; 78.
— rectangular, 57.
free-standing, 217.
French, 24; 110; 113; 113-n8; 137-n46; 165.
frescoes, 241.
front, 174; 198; 200; 202; 210.
function, 77; 78; 86; 105; 199.

G

Gandhāran, 106; 113; 121; 121-n27; 122; 123; 123-n28; 124; 126-130; 132-n36; 133; 133-n36; 134-137; 140; 144; 151; 154; 158; 170-n95; 176-178; 179-n106; 180; 181; 185; 188; 189; 226; 231; 233; 238; 242; 246; 247; 251-255; 255-n26.
garment, 153; 247; 249-n9; 250; 169-n90.
gelatin, 90.
genital organ, 16; 247.
German, 24; 37-n3; 109; 110; 112; 154; 161-n68; 186; 225-n3.
gilded, 107; 166.
gilding, 166.
girdle
— pelvic, 78.
girth, 39; 82-84.
glazed, 91-n38.
glazing, 91-n38; 149.
glue, 11; 80.
gold, 76-n33; 93-n47; 166; 214.
— river, 22-n15.
Gothic, 123, 233.
Graeco-Buddhist, 121-124.
Graeco-Roman, 122; 170-n95; 176; 231; 246; 251; 253; 255-n26.
Graeco-Roman-Traditions, 123; 123-n28.
gravel, 24; 24-n1; 25-n2.
Greek, 37-n3; 121-124; 231; 231-n8, n9; 233; 234; 246; 257.
Greeks, 122; 231; 232; 237; 246.
green, 169.
grey, 165-n75.
grinding-stone, 26; 89.
groove, 144; 144-n53; 149; 157; 179-n106; 249.
ground, 90; 92; 92-n43; 93; 99; 100; 102; 104; 105; 165; 213; 214.
— red, 166; 167.
— white, 166; 166-n80.
grounding, 92-n43; 99; 109; 165; 166; 166-n80; 167; 191; 213.
gum, 27; 27-n11, n12; 28; 28-n13, n14; 88-n25; 89; 90-n30; 91; 103; 162; 213; 263.
Gupta, 107; 180; 181; 183-n114; 184; 185; 187.

H

hair
— of animals, 90-n30; 146-n56; 147; 147-n56; 148; 149; 190.
hairdress, 155; 156; 157-n64; 159; 160-n67; 161; 161-n68; 162; 163; 186; 207.
hair-line, 35-n1; 38; 160.
hair-knot, 38; 160.
hand, 39; 57; 58; 69; 70; 70-n17, n18; 78; 88; 95; 117; 140-n51[a]; 155-n62; 157; 157-n64; 159; 159-n65; 161; 162; 166-n81; 191-n121; 203-208; 210-212; 218; 230-n7.
head, 38; 45; 49; 55; 72; 81-n8; 82; 88-n24; 110; 115-n12; 116-118; 128; 131; 137-139; 139-n51; 141; 143; 144; 146; 151-155; 155-n62; 156; 157; 157-n64; 158-160; 160-n67; 161; 161-n68; 162; 166; 167; 167-n84; 168; 168-n88; 171; 172; 172-n100; 173-176; 178; 180-n110; 185; 185-n117, n118; 190; 195; 197; 198; 201-203; 203-n5; 204-207; 207-n6; 208-210; 212; 218; 223; 261.
— Akhnur, 150; 164.
— Bodhisattva's, 120; 166-n80.
— child's, 139-n51.
— clay, 129-n31.
— female, 156; 157-n64.
— human, 155.
— shaven, 160.
— Tarimian clay, 152.
— of *ūruśūla*, 51.
head-dress, 45; 125; 126; 153; 163; 173.
head-gear, 38.
heart, 38; 144.
heart-wood, 244; 263.
heel, 38; 40; 52; 52-n21; 68; 68-n10; 200; 203.
Hellenism, 255-n26.
Hellenistic, 123; 154; 176.
hexagonal, 139; 189.
Hindī, 64-n3.
Hindu, 15; 42; 48; 67-n9; 78; 116; 118; 121-n27; 193-195; 210; 237.
Hinduism, 114.
hip, 38; 66; 256-n29.
historian, 224; 225.
— art, 126; 209.
historical, 101; 114; 117; 126; 127; 129; 132; 135; 161; 163; 167; 197; 215; 216; 222; 225; 231; 233; 236; 236-n24; 237; 240; 242; 243; 260.
historically, 104; 220; 226; 238; 253.
history, 111; 124; 127; 132; 134; 136; 218; 230; 241; 253; 255.
— art, 110; 123; 196-n3.
— of Indian art, 122.
— religious, 98.
hole, 47; 49; 51; 52; 52-n21; 53; 55; 56-n27; 59; 66; 67; 67-n9; 68; 69; 70-n18; 71; 71-n23; 72; 73; 73-n27; 74; 88; 138-n48; 139-n51; 140-n51[a]; 142-144; 144-n53; 145; 207; 210.
hollowed, 142; 143; 155-n62; 208; 210; 218.
hollowing, 205.
hook, 43; 48.
horse-hair, 146; 146-n56; 147; 147-n56; 148.
hue, 260.
husk
— rice, 204; 208.

I

iconographic, 122; 169; 212; 214.
iconographically, 214.
iconometry, 77-n33.
illustration, 171; 172; 174; 175.
image, 4; 5; 5-n18, n21; 6; 8; 10; 11; 16; 23-n18; 29; 31-n2; 33; 36; 42-n1; 43-45; 46-n10; 49-n15; 50-n17; 53; 57-59; 59-n30; 61; 62-n3; 64; 64-n3; 65-n3; 66; 67; 67-n9; 68; 69; 72; 73; 75; 76-n33; 78; 80; 85; 87; 89; 90-n30; 91-n38; 93-n47; 94-96; 97-n7; 98; 98-n7, n8; 100; 100-n17; 102; 104-n30; 105; 106; 107-n37; 108; 109; 111; 112; 113-n8; 114-118; 123-n28; 128; 130; 131-n33; 132; 133-n36; 134-138; 138-n47, n48; 139; 139-n51; 141-144; 146; 146-n55; 147-n56; 149; 151-153; 155-n62; 158-n65; 159; 160-n67; 162; 164; 165; 166-n77, n79; 167; 167-n84; 168-n88, n90; 169; 169-n92;

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

171; 173; 176-n102; 177-179; 179-n106; 180; 182; 183; 185; 188-190; 192-n1; 193-195; 196-n3; 197-203; 203-n5; 204; 205; 207-n6; 208; 209-n7; 210-217; 217-n8; 218-220; 222; 223; 225-n3; 226-n3; 230; 233; 234; 236; 238; 240-242; 245; 246; 248; 249; 250-n11, n12; 252; 254; 254-n24; 255.
— Akhnur, 177.
— ancient Egyptian, 230-n7.
— bigger, 160.
— bodhisattva, 162-n71; 166; 168-n86, n87.
— brick, 91-n37.
— brick-and-stucco, 97; 98; 101; 106.
— bronze or metal, 102.
— Buddha, 117; 138-n48; 139-n50; 161-n68, n69; 175; 175-n101; 176.
— Central Asian, 112; 113; 115.
— clay, 5-10; 13; 15; 64; 64-n4; 67; 77-80; 95; 96; 96-n3, n4; 97; 99; 100-n15; 104; 109; 111; 112; 130; 132-n36; 135-n40; 139; 140; 145; 146-n55; 150; 163-165; 167; 169; 172; 177; 179; 182; 193; 219; 219-n13; 220; 220-n16; 221; 223; 225; 226; 226-n3, n4; 228-230; 230-n7; 238; 239; 242; 244; 259; 261-264.
— coloured, 101; 103.
— extant, 225.
— Fondukistan, 179; 179-n106, n107; 186.
— fully draped, 247.
— Gandhāran, 225.
— Gandhāra stone, 176; 179-n106.
— Lucknow, 192-n2.
— male, 138-n49; 148-n58.
— metal, 250-n13; 256.
— painted brick-and-stucco, 98.
— painted clay, 98; 240.
— painted stone, 98.
— painted wooden, 98.
— polychromatic, 96; 96-n2; 97; 98; 98-n8; 104; 107; 240; 241-n36.
— polychromatic metal, 99.
— pottery, 235-n24; 236-n24.
— Rawak Stūpa, 120.
— in the round, 98-n8; 107.
— rows of, 120.
— seated Buddha, 140-n51[a].
— standing, 53.
— stone, 5; 91-n37; 95; 99; 99-n10; 100-n13, n16; 101; 106; 107; 176; 177; 251.
— stucco, 106; 155; 158-n65.
— terracotta, 103-n27; 237.
— unbaked, 184; 192.
— unbaked clay, 5; 109-111; 113; 113-n8; 118-121; 129; 131; 133-n36; 136; 141-144; 147-n56; 152; 164; 169; 170; 173-175; 178; 179; 182; 187; 191; 225-n3; 226; 227; 231; 234; 235.
— Ushkar, 177; 184.
— of various media, 99.
— wooden, 97; 104; 105; 107
image-making, 2-n8; 6; 25-n2; 26; 36.
incised, 153; 153-n61; 248-250; 255; 256.
Indian, 2-n3; 5-n18; 7; 36; 37; 37-n3; 65; 68; 78; 86; 92-n43; 95-n1; 106-n33; 109; 110; 112; 113; 113-n8; 114; 122; 124; 124-n29; 125; 127; 136-n42; 140; 146-n55; 149; 151; 155; 163; 170-n95; 178; 179; 182; 189; 223; 223-n1; 226; 229; 230; 233-235; 237-240; 240-n30; 246; 247; 249; 250; 251; 253; 254; 258; 258-n1.
Indians, 109.
Indo-Afghan, 90-n30; 101; 106; 111; 113; 117-121; 121-n27; 122; 123; 123-n28; 124; 126-130; 131-n33; 133; 133-n36; 134-137; 139; 140; 143-145; 146-n55; 147-151; 154-158; 163; 164; 167-169; 170-n95; 176-178; 179-n106; 180; 183-185; 188-191; 217; 218; 223; 226; 229; 231; 233; 234; 238; 246; 247; 251-254; 255-n26.
Indo-Iranian, 124; 124-n29.
Indonesian, 125.
ingredient, 146-n55; 147; 148; 223.
inscription, 107-n37.
inscriptional, 107.
installation, 64; 66; 71; 72; 75.
installing, 73; 74; 77.
instrument, 157; 158; 204.
Iranian, 124-n29; 125.
Irano-Buddhist, 124; 126.
irises, 167.
iron, 65; 69; 70-n18; 79; 142.
Italian, 124; 125.
ivory, 104-n31; 249-n9.
ivories
— Indian, 249.

J

Jaina, 243; 258.
Jainism, 246; 246-n1.
Jamidār, 218.
Japanese, 228-n5; 235; 237.
jaw, 204.
Jinism, 246-n1.
joining, 137; 139; 205; 207; 208.
joint, 43; 45; 49-51; 53; 54; 70; 70-n18; 71; 71-n22; 75; 77; 105; 137; 144; 145; 152; 189; 204; 210; 211.
— elbow, 39; 54.
— head, 141.
— knee, 53.
— knee and elbow, 53-n23.
— neck, 207.
— wrist, 39; 70.
jute, 211; 212; 215.

K

Kāśmīrian, 121-n27; 133-n36; 163.
Khotanese, 126.
Khotan-Iranians, 126.
kiln, 116-118; 135; 142; 144; 171; 172; 231.
knee, 38; 39; 49; 53; 53-n23; 54; 71-n22; 75; 85; 199; 202; 203; 252.
knee-cap, 38.
knife, 157.
Korean, 225; 225-n3.
Kṣatriya, 14; 15; 257; 258; 258-n2.
Kucān, 124; 124-n29; 179; 179-n106.
Kushan, 122; 126; 127; 132.

L

lacquer, 103.
lappet, 247; 247-n2; 248.
lash
— eye, 168.
Latin, 232.
layer, 10; 26; 27; 28-n13, n14; 86; 87-n20; 88; 88-n25; 89; 94; 102; 105; 146-n56; 147; 147-n56; 148-153; 154-n61; 156; 158; 162; 164; 174; 176; 190; 216; 240-242.
— clay, 143; 145.
— surface, 172.
— upper, 146.
lay figure, 232.
leaf, 244; 263.
— gold, 166.
leg, 48; 49-n15; 50; 51; 53; 53-n23; 56; 59; 68; 69; 71; 72; 74; 75; 78;

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

82-85; 88; 88-n24; 137; 139; 189; 195; 198-202; 208; 217; 232; 247; 248; 252.
lid
— eye, 158; 168; 168-n86.
life, 7-9; 244.
limb, 42; 54-n24; 66; 75; 76; 76-n33; 85; 105; 137; 154; 155; 164; 199; 201; 203; 208; 217; 231; 235-n24.
— main, 88-n24.
— minor, 76-n33.
lime, 23; 23-n18; 24; 26-n8; 28; 29; 92-n43; 102; 105; 109; 112; 234; 242.
— quick, 131-n32.
lime-slip, 130-n31; 164-n73.
lime-stone, 23; 24; 24-n1; 25; 25-n2; 26; 26-n8; 28; 29; 91-n38; 228; 242.
lime-stone-paste, 7; 24; 27-29; 87; 89; 94; 100-n13, n15; 244.
lime-wash, 165-n74.
— white, 165.
lime-water, 91-n38.
line, 154; 154-n61; 158; 165; 168-n86, n88; 169; 240; 248; 249; 253; 256; 256-n29.
— blue, 168.
— hair, 168.
— incised, 153; 153-n61; 248-250; 255.
— paralell, 249-n9.
— red, 168; 168-n86.
lineal, 247.
lip, 95; 184; 240.
— lower, 186; 187.
literature, 77; 106; 121; 137-n46; 170-n95; 187-n119; 220-n16; 227-n5; 229; 231-n9; 233-n19; 239; 242; 243; 257; 258.
— *Āgama*, 224.
— ancient, 64; 65-n4.
— archaeological, 128; 137; 146; 149; 150; 152; 164-n73; 168-170; 175; 189; 223.
— Bengali, 218-n9.
— Buddhist, 240.
— English, 110.
— French, 110.
— German, 109; 110.
— Indian archaeological, 109.
lobe, 179-n106.
lock, 157; 161; 161-n68.
— hair, 155; 156; 158-160; 162-164.
loin, 38; 61-n2; 63; 179-n106; 203.

M

male, 195; 247; 251-n16.
manikin, 232.
marrow, 244; 259-261; 263.
mask, 155-157; 206; 212.
— facial, 162.
mass, 151; 152; 163; 247; 250; 250-n11.
material
— binding, 67.
Maurya, 106.
measurement, 20-n10; 30; 35; 35-n1; 36-38; 40; 40-n6; 41; 42-n1; 44; 45; 48; 48-n15; 49; 49-n15; 50; 50-n16, n17, n18; 52; 52-n19, n21; 53; 54; 54-n24; 55-n25; 56; 56-n28; 57; 61; 63; 63-n7, n8; 67-n9; 68-70; 70-n21; 71-n23; 73; 75; 76; 76-n33; 77; 88; 90; 91-n39; 99; 100; 100-n17; 128; 172-n100; 198; 203; 203-n5; 206.
— relative, 16; 36; 44; 230.
— relative system, 16.
— system of, 194.
media, 6; 95; 97-n7; 98-n7, n8; 99; 102; 104; 104-n30; 105; 109; 132; 133-n36; 134; 135; 141; 142; 161-n68; 169; 216; 230-n7; 236.
— combined, 98.
— figural, 231.
— pliable, 161-n68.
— sculptural, 95; 97; 98-n7; 130; 136.
medium, 1; 11; 89-91; 95; 97; 97-n7; 102-n26; 106-n33; 110; 111; 120; 132; 133-n36; 141; 142; 171; 182-184; 187; 188; 213; 214; 230-n7; 231; 240-n30; 241; 242.
— binding, 11; 93; 94; 99; 104; 136; 165; 191; 213; 230.
— clay, 226-n3.
— pliable, 141.
— sculptural, 133-n36; 134; 234.
— stone, 176.
medium-sized, 18.
megalithic, 242.
Mesopotamian, 230-n7.
metal, 1; 75; 79; 95; 99; 102; 135; 250-n13; 256.
metaphor, 263; 264.
metaphorical, 230; 238; 259.
metaphorical explanation, 7.
metaphorical expression, 9.
metaphorical statement, 9.
metaphorically, 65.
"minor support", 142; 198-202; 217; 218.
mixed clay, 19.
mode, 247; 249-252; 254; 255-n26; 256.
mode 1, 248; 251.
mode 1a, 248; 249; 250; 252.
mode 2, 248; 252.
mode 2a, 248; 252.
mode 3, 248; 249; 252.
mode 4, 248; 250; 252.
model, 137-n46; 232; 233.
modelled, 144; 155-n62; 158; 159; 207; 242.
modeller, 1; 10; 64; 64-n3; 68; 75; 151; 155; 158; 161-n68; 186-188; 190; 192-n1; 206; 212; 216; 223; 228.
— ancient, 42; 244.
— Ushkar, 160.
modelling, 10; 35; 45; 57; 72; 89; 118; 120; 132; 136; 142; 144; 149; 151; 153; 154; 156-158; 164; 174; 176; 192-n1; 199; 203; 204; 206; 208; 213; 215; 217; 221; 226-n3; 230; 238; 264.
— clay, 1-3; 5; 6; 8; 11-n2; 31-n2; 38; 64-n3; 65-n3; 86; 109; 127; 130; 137; 140; 141; 152; 162; 175; 177; 191; 193-195; 212; 215; 218; 220; 220-n16; 221; 226-229; 230-n7; 231; 231-n10; 234; 241; 243; 244; 261-264.
— unbaked clay, 155; 188; 192; 222; 224; 231-n9; 233; 235; 236; 239; 243; 245.
monastery, 107; 115; 116-n18.
— Akhnur, 120.
Mongols, 126.
mortar, 102; 164.
— mud, 97-n7.
mortice, 44; 49; 50; 53; 54; 58; 59; 69; 72; 74.
morticing, 156; 157.
mosaics, 147-n56.
mould, 149; 154; 155; 156; 157-n64; 159; 159-n66; 160; 161; 161-n68; 162; 185-n118; 204-208; 210; 212; 213; 218.
— stucco and clay, 212.
moulding, 155.
moulded, 159; 207.
moustache, 159; 159-n66.
mouth, 184; 186; 187.
mud, 19; 20; 97-n7; 105; 106; 184-

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

n114; 240; 262; 262-n15.
mūlasarvāstivādin, 228.
muscle, 7; 187; 243.
— deltoid, 38; 40-n6.
museum, 128; 129-n30; 165; 191; 252.
Muslim, 118.

N

nail, 47; 59; 69; 70; 70-n18; 72; 78; 95; 176-n102.
— copper, 70-n18.
— wooden, 176.
Nara Period, 236-238.
nasal, 154; 154-n61.
navel, 37-n3; 38; 68; 74; 80; 81; 81-n8; 82; 85; 254.
neck, 38; 38-n4; 74; 75; 88-n24; 117; 118; 137; 138; 138-n48; 139; 141-145; 152; 155-n62; 156; 157; 169-n90; 171; 173; 185; 201; 203; 203-n5; 204; 205; 207-210; 212.
— folds of the, 168.
— pit of the, 38; 40-n6; 68.
net, 82.
nomenclature, 109; 112; 113; 124; 130.
norm, 152; 153; 255-n26.
Northern Indian, 25-n2; 239.
nose, 38; 45; 82; 88-n24; 153; 184; 186; 187.
nostril, 105; 153-n61.
nude, 246; 247.
nudity, 246.

O

ochre
— red, 165-n76; 169-n90.
— red and yellow, 214.
— yellow, 165-n76.
one-eighth, 36.
organ
— genital, 37-n3; 38; 82; 203; 247.

P

paint, 89; 90; 92; 104-n31; 140-n51[a]; 166-n77; 167.
— white, 100-n15.
painted, 29; 107; 113; 120; 230-n7; 249-n9.
painter, 125; 183; 194; 216.
— Ajanta, 125.
— Indian, 254.
— Rajput, 125.
painting, 3-n12; 30; 35; 36; 90; 91-n37; 92-n43; 93-n46; 95; 96-n2; 97; 102; 111; 124-n29; 125; 167; 182; 191; 216; 230; 240; 241; 254; 256.
— European, 125; 254.
— Indian, 125.
— Persian, 125.
Pal, 215.
Pāli, 106; 226; 227-n5; 228-n5; 239; 243; 263.
palm, 35; 35-n1; 95; 201; 211.
part, 87; 87-n20; 88-n24; 91; 92-n46; 95; 100-n17; 103; 105; 117; 124; 134; 137; 141; 145; 150-152; 156-160; 162.
— component, 64; 77; 78.
— upper, 139.
— white, 168.
Parthians, 132.
paste, 25; 25-n2; 26; 27; 27-n12; 28; 28-n13, n14; 29; 90; 92.
— of cooked rice, 239.
— first, 27.
— number two a, 28.
— number two b, 28.
— number two c, 28.
pasting, 89; 100-n13, n16; 157; 159-161; 161-n68; 164; 190; 211-213.
patting, 117.
pearl-shell, 92-n43.
pebble, 24; 25;25-n2.
pedestal, 53; 67; 67-n9; 68; 69; 70-n18; 71-73; 73-n26; 74; 75; 107; 139; 202; 217.
peg, 172.
— wooden, 116; 117; 139; 173.
pelvis, 78.
periphery, 46-n10.
Persepolitan, 250.
Persian, 118; 125; 126.
picture, 193.
piece mould, 155.
pigment, 167.
pigmentary, 244; 262.
pin, 200.
pink, 167; 167-n83.
plaque, 155; 219.
—ivory, 104-n31.
plaster, 130-n31; 132; 230-n7; 240; 241.
— fine, 165-n74.
— lime, 105.
plate, 58.
— copper, 43; 51; 57; 58; 69; 70; 70-n17, n18, n19; 71-n22; 73-n27; 88; 211.
platform, 66; 67; 197.
pliable, 208.
polish, 148; 149; 205.
polishing, 149; 153; 158; 164; 208; 210; 232.
polychromatic, 96; 96-n2; 97; 98; 98-n8; 99; 104; 106; 107; 240; 241-n36.
polychrome, 95; 96; 98-n8; 104; 107; 118; 165-n75; 166; 166-n77; 230-n7.
polychromy, 5-n18; 6; 95; 95-n1; 96; 97; 98-n8; 99-103; 104-n31; 105; 106; 106-n33; 107-109; 120; 136; 136-n42; 148; 165; 166-n77; 167-169; 223-n1; 240-n30.
— technique of, 96; 99; 104.
portuguese, 124.
pose, 68.
position
— reclining, 74.
post, 197; 198; 200.
postural, 253.
posture, 52; 59-n30; 66-n6; 69; 139-n51; 195; 199; 217; 233-n17; 247.
— frontal, 68.
— reclining, 43; 46-n10; 66; 71; 73-75; 139-n51; 224.
— sitting, 43; 45; 46; 46-n10; 47; 50-n17; 66; 71; 71-n23; 72-74; 139.
— standing, 43; 46-n10; 50-n17; 52; 53; 66; 67; 72-74; 139.
practice, 64; 65-n3; 193.
— modern, 1; 64-n3; 143; 155; 155-n62; 159; 192-n2; 195; 210; 212; 213; 216; 217; 217-n8; 218; 222.
— present, 192; 216; 218.
Prākṛt, 239; 243.
preparation, 90; 90-n30; 92; 165; 208; 210; 211; 213.
procedure
— technical, 249.
process, 79; 94.
— reversal, 256.
— technical, 96.
profile, 247-n2.
proportion, 30; 35; 37; 37-n3; 39; 40; 42-n1; 44; 63; 203; 203-n5.
pulpy, 162.
pupil, 184.
puppet
— polychromatic, 106.
— wooden, 106.

R

rafter, 198.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

— horizontal, 199; 200.
rear, 201; 206; 207; 210; 213; 217.
red, 166; 167; 167-n83; 168; 168-n86, n90; 169; 169-n90, n92; 214.
reddish, 146; 149.
reed, 146-n56; 147-n56; 173; 176; 212.
— bundle, 146.
— core of, 145; 236-n24.
region
— deltoid, 55; 84.
— head, 82.
— jaw, 204.
— thoracic, 77.
relative *aṅgula*, 22-n16.
relief, 5; 102; 107; 152; 163; 217.
— bronze, 102.
— high, 118.
— stone, 102-n25.
— terracotta, 237.
relievo, 116.
— mural, 120.
repair, 104.
— local, 103; 104.
resin, 244; 263.
rib, 43; 57; 77; 179-n106.
ridges, 158.
— raised, 175; 177; 249-252; 254; 256.
Rococo, 182; 188-n120.
rod, 75; 159-n66; 228.
— copper, 73.
— iron, 142.
— metal, 75-n30.
— wooden, 232.
Roman, 37-n3; 121-125; 231-n9; 233; 234; 246.
Romans, 122; 237.
Romano-Buddhist, 121-124; 133-n36.
rope, 7; 10; 13; 16; 17; 17-n15, n16; 18; 18-n21; 51; 74; 76-n33; 78; 80; 80-n1; 81; 81-n6, n8; 82; 83; 83-n10; 84-86; 86-n17; 87; 87-n20; 145; 146; 158-n65; 160; 173; 176; 177; 190; 201; 203; 216; 228; 243; 244; 263.
— coconut, 86; 222; 230.
— major, 16-18; 81; 81-n8; 82; 85; 85-n15.
— medium-sized, 18; 82; 85.
— minor, 15; 18; 81; 81-n8; 82-84; 85; 85-n15; 86.
— most important, 16.
rose, 166; 166-n79; 169-n94.
— deep, 169-n90.
row, 197; 198; 208; 212.
rubble, 111; 136.
Russian, 24.

S

sacral, 199; 200.
sago, 214; 215.
Śaivism, 15.
Śakas, 122; 132.
sand, 26-n8; 27-n11; 33; 99-n10; 149; 211; 217-n8.
— river, 26-n9.
Sanskrit, 24; 25-n2; 28; 44; 65; 98-n8; 113-n8; 179-n100; 141; 148; 152; 157; 163; 186; 211; 212; 214-218; 220-n16; 227-n5; 228-n5; 229; 239; 242; 243; 246-n1; 262.
sap, 244; 263.
sap-wood, 244; 263.
Sarvāstivādin, 228.
Sasanian, 126.
schist, 134.
Schist-School, 170-n95.
scriptures, 259; 260; 260-n6.
— Buddhist, 262.
sculptor, 64; 249; 250; 252.
sculptural, 95; 97; 98-n7; 119; 130; 133-n36; 134; 136; 184; 258.
sculpturally, 161-n68; 199; 247.
sculpture, 1; 23-n18; 35; 76-n33; 95; 102; 106; 107; 113; 113-n8; 122; 129; 132; 134; 135; 137-n46; 154; 182; 183; 195; 226-n3; 238; 253; 254.
— clay, 131-n33; 236.
— earthenware, 135-n40.
— Gandhāra, 113.
— Indian, 113-n8.
— painted, 30.
— polychromatic wooden, 107.
— stone, 111; 161-n68.
— stucco, 131-n33.
— wooden, 230-n7.
season, 34.
seasoning, 33; 34-n11.
seat, 139.
secretion, 90.
— dried, 89; 90; 103; 230.
sect
— Pāñcarātra, 227.
— Śaiva, 96.
— Vaikhānasa, 96.
seed
— sesame, 100; 100-n15.
— tamarind, 213, 214.
shade, 103; 168; 215.
— of colour, 260.
Shāhi, 133-n36; 177; 180-n110; 181; 181-n110; 182-188.
Shāhi Period, 113-n8.
shank, 38; 39; 43; 138-n47; 140-n51[a]; 198; 203; 252.
sharpness, 213.
sheet, 70-n21; 206; 207.
— copper, 59; 70; 71.
shoulder, 74; 77; 87; 88-n24; 152; 158-n65; 168; 179-n106; 198-201; 254; 255-n26.
— left, 248; 252; 255-n26.
— right, 151; 255.
Siamese, 260-n9.
side, 179-n106.
silt, 210.
— river, 216.
silver, 76-n33; 214.
Sindhu (river), 127; 134.
sinew, 244; 259; 260; 262; 263.
Sinologist, 225-n3; 226-n3.
skeleton, 65; 232.
skin, 7; 8; 212; 213; 244; 260-263.
skull, 38; 39; 155; 156; 161-n68; 207; 209.
slime, 19; 164.
slip, 148; 149; 153-n61; 164; 164-n73; 174; 175; 210; 223.
socket, 50; 54; 58; 59; 66; 68; 69; 72; 74; 75; 81; 143; 158.
— eye, 153.
soil, 19; 19-n1, n3; 20; 20-n4.
solid, 142; 155.
source, 3-n12; 4-n16; 5-n21; 170; 176-n102; 211; 217-219; 222; 223.
— ancient Sanskrit, 152.
— literary, 189; 225-227; 229; 231.
— older, 224.
— Persian Muslim, 118.
South Indian, 23-n18; 24; 97; 98; 148.
standing
— free, 202.
statuary, 5-n18; 95; 95-n1; 106-n33; 112; 114; 132; 133-n36; 135; 136; 136-n42; 154; 163; 168; 175; 177; 188; 212; 223-n1; 256.
— classical, 37-n3.
— Indian, 240-n30.
— Tarimian, 157.
statue, 131-n32; 176; 225-n3; 230-n7; 232; 250.
— clay, 1; 8; 9.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

stick, 64-n3; 202; 217; 233.
— bamboo, 143.
— long, 156.
— wooden, 152; 232.
stickiness, 87-n18.
sticky, 208; 210; 211; 213.
stomach, 88; 151; 217; 243.
— pit of the, 38.
stone, 1; 5; 24; 46; 67; 76-n33; 91-n37; 95; 96; 98; 99; 99-n10; 100; 100-n13, n16; 101; 102; 102-n25; 105-107; 111; 130; 132; 132-n36; 133; 134; 136; 141; 142; 144-n53; 161-n68; 176; 177; 179-n106; 183; 184; 192-n1; 211; 232; 234; 250; 251; 253; 256.
— precious, 67-n9; 87; 93; 93-n47.
stone carver, 192-n1.
strand, 16; 17; 17-n16; 18; 83; 83-n10.
straw, 65-n3; 140-n51[a]; 146-n55; 147; 173; 190; 201-204; 208; 209; 209-n7; 216; 219-222; 230-n7; 235-n24; 236-n24.
— bundle of, 145.
— chopped, 146; 146-n56; 147; 147-n56; 148-150; 176.
— core of, 145.
— rice, 143; 201; 220.
string, 175.
string-like, 158; 177; 249; 250; 252; 254; 255.
structural, 138.
structure, 64-n3.
— basic, 202.
strut
— wooden, 137-n46.
stucco, 2-n3; 23; 23-n18; 25-n2; 28; 29; 69; 71-n23; 72; 91-n38; 97; 97-n7; 98; 98-n7; 101; 101-n20; 102; 106; 109-112; 113-n8, n9; 115; 116; 118; 121; 123-n28; 129; 130-n31; 131-n32, n33; 132; 132-n36; 133; 134; 134-n38; 135-139; 140-n51[a]; 141-145; 145-n54; 151; 153-n61; 154; 154-n61; 155; 156; 158-n65; 161-n68; 164-169; 175-n101; 176; 176-n102; 177; 182-184; 188; 192-n1; 196-n3; 205; 206; 212; 226-n3; 234; 235-n22; 237; 240-242; 253.
— Hadda, 133-n36.
— Indo-Afghan, 154.
— painted, 113; 240.
Stucco-School, 170-n95.
Stūpa, 178; 180.
— Ushkar, 181.
sun-dried-clay figure, 5.
supple, 213.
"support", 58; 66; 75; 78; 139; 141.
surface
— fibrous, 86.
— glazed, 91-n38.
symmetrical, 254.

T

tamarind, 213; 214.
Tamil, 29.
Tantrism, 243; 258-n2.
Tarimian, 109; 112; 113; 119; 138; 148; 149; 152; 154; 155; 157; 163; 168; 181; 236-n24.
technical, 10; 11; 28-n14; 30; 34-n11; 45; 46-n10; 51; 53-n23; 73; 79; 94; 95; 107; 108; 110; 114; 116; 120; 121; 128; 129; 129-n30; 130; 131; 147; 161; 162; 174-176; 178; 183; 189; 194; 195; 202; 205; 207; 215; 220; 223; 226; 228; 230-n7; 231; 233; 235; 238; 242; 249; 250; 262.
technically, 27-n12; 49-n16; 50-n16; 72-n24; 89; 104; 117; 155; 213; 218.
technical sense, 11-n1.
technical significance, 19-n3.
technique, 1-3; 3-n12; 4-6; 8; 10; 26-n6; 29; 32-n8; 42-n1; 60; 64-n3; 65-n3; 66-n6; 67; 68; 78; 79; 86-88; 91-n37; 92-n43; 95; 96; 99; 101; 103; 104; 106; 109; 114; 116-118; 120-122; 123-n28; 125; 127-130; 132; 137; 142; 144; 147-n56; 148; 150; 156; 158; 161-n68; 168; 170; 170-n95; 172; 175; 177; 179; 181-183; 188; 191; 192; 192-n2; 193; 194; 219; 220-225; 225-n2; 226; 228; 230; 230-n7; 231; 231-n9; 232-235; 235-n22, n24; 236; 236-n24; 237; 239; 241-243.
— baked, 133; 215.
— baked and unbaked, 111.
— Central Asian, 179.
— clay, 243.
— Indian, 179; 230-n7.
— unbaked, 131; 133; 135; 135-n40; 155; 157; 160-n67; 171; 173; 174; 177; 215.
— unbaked clay, 136; 141; 156; 161; 163; 193; 216; 226; 227; 229; 234; 237; 238.
templar, 153; 157; 158; 161; 186
tenacity, 212.
tenon, 44; 49; 53; 54.
term, 47-n12; 67-n9; 72-n24; 232; 232-n14; 233; 239-241; 241-n36.
— anatomical, 14.
— ancient, 65.
— technical, 11; 11-1; 14; 37-n2; 194; 242.
terminology, 14-n3; 36; 44; 48-n14; 58; 88-n24; 107; 136; 141; 157; 171; 212.
terracotta, 5; 5-n21; 6; 97-n7; 103-n27; 109-111; 113; 113-n8; 114-118; 120; 121; 129; 129-n31; 130-n31; 131; 131-n32; 132; 132-n36; 133; 133-n36; 135; 137; 139-n51; 141-144; 146-n55; 160-n67; 163; 164; 164-n73; 166-n80; 167-n82; 169-n91; 171-175; 178; 180-188; 192; 206; 225-n3; 229; 231; 231-n8, n9; 233-n19; 236-238.
— Ahicchatrā, 185.
— Greek, 231-n8.
— originally, 120.
— Shāhi, 177; 178; 180-n110; 181; 181-n110; 182-188.
text
— *Āgama*, 192; 221; 222; 227; 228; 230; 233; 234; 238; 242; 245; 262.
— ancient, 6; 65-n3; 145; 190; 191; 199; 201; 217-n8; 233.
— ancient Sanskrit, 148.
— Chinese, 225-n3.
— earlier, 223.
— early, 242.
— Pāli, 228-n5; 263.
— Sanskrit, 141; 163; 218.
— Vaikhānasa, 97; 98-n8; 224.
Textual, 101; 138; 141; 169; 188-191; 238.
texture, 120; 129-n31; 154; 157-n64; 172; 175; 183; 211.
theory, 3-n12; 64; 68.
thigh, 38; 39; 43; 71-n22; 72; 82; 140-n51[a]; 146; 202; 203; 248.
thread, 216.
— copper, 71-n22.
— cotton, 85-n15.
three-dimensional, 241-n36.
three-quarter, 174.
throat, 38-n4; 87; 152.
Tibetan, 227-n5.
timber, 101-n20; 118; 195; 197.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

tint, 103; 168; 169.
— reddish, 149.
toes, 40; 58; 95.
tool, 136; 137; 154-n61; 204; 206; 210.
— wooden, 205.
torso, 72; 75; 76.
trace, 164-n73; 165; 166; 166-n77; 167.
tradition, 192; 192-n1; 194; 196-n3; 198.
— Graeco-Roman, 176.
traditional, 197.
treatise, 1-3; 33-n10; 216.
— ancient, 109.
tree, 20; 31; 31-n2; 32; 32-n8; 33; 33-n10; 34-n11; 44; 73; 263; 264.
— female, 32; 33; 33-n10.
— male, 32; 33; 33-n10.
— neuter, 32; 33; 33-n10.
triangle, 197.
— concentric, 198.
triangular, 151; 198; 202.
trunk, 57; 66; 72; 77; 81-n8; 117; 137; 143; 144; 144-n53; 151; 155; 156; 179; 179-n106; 199; 201-204; 208-210; 254; 255; 255-n26.
— bare, 247.
Turks, 126.
twig, 145.
two-legged, 198.

U

Udayana type, 254-256.
undergarment, 168.
Upaniṣadic, 8; 238; 258; 261; 262; 264.
U-shaped, 255-n26.

V

varnish, 10; 11; 80; 190; 214; 215; 244; 263.
Vedic, 15; 24; 24-n1; 97; 98; 219-n13; 243; 257; 258-n2.
vehicle, 88; 88-n24; 212.
— wooden, 108.
veins, 7; 13; 14; 14-n3; 15; 228; 243; 244.
Venician, 147-n56.
vermilion, 169-n90.
vertebral column, 16; 17.
view, 195; 202.
— back, 163.
— front, 163; 174.
— side, 163.
— three-quarter, 163; 174.
volume, 161-n68; 246; 251; 253.
— convex, 247.

W

waist, 166.
wall-painting, 105; 109; 165; 179-n106; 256-n29.
wash, 153; 164.
— clay, 158; 164-n73.
water
— coconut, 21.
— pure lime, 91-n38.
— of *śarkarākalka*, 91-n38.
wax, 232; 256.
western, 193.
West-Asiatic, 122.
Wheelerian, 122.
white, 91; 99; 100; 100-n15; 101-104; 165; 165-n75; 166; 166-n80, n81; 167-169; 191; 213-215; 230; 230-n7.
white-coloured, 167.
wing
— nasal, 137; 153; 154; 186.
wire
— copper, 51; 70; 70-n18.
wood, 5; 30; 31; 31-n2; 32; 33; 35; 44; 57-59; 64-n3; 65-n3; 69; 73; 73-n27; 75; 95; 96; 102-104; 104-n30; 105; 108; 116; 118; 135; 137; 138; 138-n48; 139-n51; 140-n51[a]; 143; 144-146; 151; 157; 177; 195; 196; 196-n3; 197; 198; 205; 216; 222.
— strong, 228.
wood-work, 107.
works
— Sanskrit, 2; 157.
— Tamil, 25-n2.
wrist, 35; 84; 159; 159-n66.

Y

yellow, 168; 214.
yellowish, 168.

Z

zone, 67-n8; 195; 197; 248; 249; 249-n9; 250; 251.

CLASSIFIED INDICES

1. INDEX OF BOTANICAL TERMS

Acacia Catechu, 20; 31; 73.
Aegle Marmelos, 21; 22.
Aeschynomene aspera, 215.
alburnum, 244; 263.
Alstonia scholaris (Echites scholaris), 31.
Amyris Agallocha, 21.
Amyris Agallochum, 12; 21.
Bassia Latifolia, 20; 22; 31.
Butea Frondosa, 48.
Cambium, 244; 263.
Cathartocarpus Fistula, 31.
Celosia Cristata, 31.
Cork-cambium, 244; 263.
Costus arabicus, 21.
Costus speciosus, 21.
Curcuma longa, 21.
Dalbergia sissoo, 31.
Diospyros embryopteres, 31.
Duramen, 244; 263.
Echites scholaris (Alstonia scholaris), 31.
Eragrostis cynosuroides, 28; 89.
Feronia Elephantum, 21; 22; 27; 28; 89; 90; 103; 230.
Ficus glomerata, 20.
Ficus Indica, 20.
Ficus Religiosa, 20; 85.
Holarrhena Antidysenterica, 31.
Melia azadirachta, 31-n2.
Michelia campaka, 31.
Mimosa Suma (Prosopis Spicigera), 31-n2.
Olibanum, 12; 21.
Phaseolus Radiatus, 21.
Phylanthus Emblica, 20; 26; 28; 91-n39.
Pinus Longifolia, 12; 21.
Poa cynosuroides, 220.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

Prosopis Spicigera (Mimosa Suma), 31-n2.
Prunus padum, 31.
Pterocarpus Santalinus, 31.
Pterospermum Acrifolium, 31.
Santalum Album, 31.
Tectona Grandis (teak), 31-n2.
Terminalia Arjuna, 20; 31.
Terminalia Bellerica, 20; 26; 28; 91-n39.
Terminalia Chebula, 20; 26; 28; 91-n39.
Vateria indica (white dammar), 31.
Vatica Robusta, 12-n4; 21.
Wrightia zeylanica, 31.

2. INDEX OF MUSEUMS AND DEPARTMENTS

Albums
— Photo, Archaeological Survey of India, New Delhi, 140; 175.
Archaeological Survey of India, New Delhi, 107-n37; 112.
Archives
— Photo, Archaeological Survey of India, New Delhi, 110; 129; 174; 185-n117.
— Photo, Museum für Indische Kunst, Berlin, 144-n53.
Department
— Kāśmīr State Archaeological, Śrīnagar, 129-n30.
Musée Guimet, Paris, 104-n31; 113; 129-n30; 161-n68; 252.
Museo Nazionale d'Arte Orientale, Rome, 251.
Museum
— Ashmolean, Oxford, 252.
— Berlin, 116; 145; 147.
— Birmingham, 256.
— British, London, 133-n36; 161-n68; 180-n110; 185; 188-n120; 252.
— of Fine Arts, Boston, 252.
— Hanoi, 250-n11.
— Indian, Calcutta, 115; 149-n59; 175-n101; 249; 249-n8; 252.
— für Indische Kunst, Berlin, 144-n53; 161-n68; 252.
— Kabul, 104-n31; 129-n30; 252.
— Lahore, 185-n118.
— Mathurā, 175-n101; 254-n24; 256.
— Paṭnā, 249; 249-n8.
— Pergamon, Berlin, 230-n7.
— Peshawar, 129-n30.
— Rietberg, Zürich, 252.
— in Śrīnagar, 115.
— Taxila, 128; 140-n51[a].
— Victoria and Albert, London, 252.
— für Völkerkunde, Berlin, 161-n68.
Rijksmuseum voor Volkenkunde, Leiden, 251; 252.

3. INDEX OF GEOGRAPHICAL NAMES

(Adjectives Formed Out of These Names Are Found in The General Index II)

Afghanistan, 104-n31; 110; 112; 127; 128; 130-n31; 179-n107.
Ahicchatrā, 114; 181; 185-187.
Ajanta, 105; 107; 125; 187; 249-n9.
Akhnur, 115; 116; 116-n18; 117; 118; 120; 133-n36; 139; 140; 146; 149; 150; 155; 160; 160-n67; 164; 172; 174; 175; 177; 178; 181-185; 188-190; 223; 229.
Alexandria, 113.
Amarāvatī, 106; 248; 248-n7; 250; 250-n11; 251.
Āndhra, 108.
Anūrādhapura, 250-n11.
Arabia, 37-n3.
Astāna, 192-n2; 236-n24.
Bādurīya, 218.
Bāli, 15.
Bāmiyān, 124; 126; 127; 130-n31; 131; 131-n33; 145; 147-n56; 158-n65; 164-n73; 166-n77; 175; 175-n101; 176-178; 251.
Banaras, 226.
Bāṅkuḍā, 192.
Bardhamān, 192.
Barma, 131-n2.
Begram, 104-n31; 249.
Bengal, 5; 64-n3; 65-n3; 142; 143; 145; 192-195; 204; 205; 210; 213; 216; 217; 217-n8; 218; 218-n9; 219; 219-n13; 221; 222; 237.
Berlin, 116; 144-n53; 147; 161-n68; 230-n7.
Besnagar, 247-n2; 248.
Bhārhut, 106; 247-n2; 248.
Bhubaṇḍāṅgā, 194; 203-n5; 204; 206; 212; 214; 216; 218.
Bihar, 187.
Bīrbhūm, 192.
Bolpur, 196-n3.
Boston, 248.
Buddhagayā, 107; 248.
Butkara, 251.
Calcutta, 115; 149-n59; 175-n101; 187-n119; 194; 249.
Cave
— G, Bāmiyān, 130-n31; 131-n33; 178.
— 3, Kumtura, 144-n53.
Central Asia, 1-n3; 113; 124; 126; 127; 133-n36; 145; 156; 170-n95; 179; 181; 192-n2; 234-236; 236-n24; 238.
Ceylon, 131; 226; 227; 250-n11.
Chicago, 236-n24.
China, 235; 235-n24; 236.
Cīnā, 24.
Dharmarājika Stūpa, 178.
Dīdargaṃj, 249.
Dong Duong, 250-n11, n13.
East, 236; 237.
East Turkistan, 109; 112; 119; 124; 138; 143-145; 147; 147-n56; 154; 160; 163; 167; 168; 168-n86; 181; 192-n2; 236-n24; 256.
Eastern Turkistan, 89.
Endere, 119.
England, 113.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

Europe, 22-n15; 86; 125; 136; 230-n7.
Far East, 256.
Fondukistan, 113; 113-n8; 130-n31; 133-n36; 137-n46; 140; 166; 168-n86; 178; 179; 179-n106, n107; 180-n110; 181-183; 185-188; 249; 255-n26.
Friar Bala, 248.
Gandhāra, 101; 110; 111; 113; 117; 118; 120-124; 126; 127; 130; 132; 132-n36; 133-n36; 134; 137; 139; 150; 163; 170-n95; 176; 180; 181; 184; 192-n1; 205; 233-235; 235-n22; 236; 238; 255-n26.
Gilgit, 227-n5.
Göttingen, 241-n36.
Greece, 123; 231; 231-n10.
Haḍḍa, 127; 133-n36; 145; 145-n54; 151; 161-n68; 165-n76; 182; 184; 252.
Hārvan, 114; 118.
"Haute-Koktcha", 165-n76.
Hoti Mardan, 252.
India, 1; 4-n14; 9; 11-n1; 14; 24; 35; 37; 67-n9; 95; 99; 104; 105; 107-n37; 110; 113; 125; 127; 128; 130-132; 134; 136; 140; 163; 170-n95; 176; 179-n106; 180; 180-n110; 181; 183; 185-n117; 192; 192-n1; 193; 195; 219; 219-n13; 225; 226; 230; 230-n7; 234-239; 242; 246; 251; 253; 256.
— North-West, 133-n36; 180-n110; 182.
Indonesia, 15.
Italy, 231-n10.
Jammu, 114; 115; 120; 121; 137; 140; 143; 146; 149; 150; 184; 184-n114; 188; 189; 191; 218; 223; 226; 238.
Japan, 235; 236; 238.
Jauliān, 110; 146-n55; 149; 158; 170; 171-n97; 178; 183; 188.
Kālawān, 158; 171-n97; 172; 175; 178; 183; 188.
Kansu, 235.
Kapiśa, 180-n110; 223.
Kashgar, 181.
Kashmir, 133-n36.
Kāśmīr, 114-116; 118-121; 121-n27; 129-n30; 137; 140; 143; 150; 180-182; 184; 184-n114; 188-191; 218; 223; 226; 228; 238.
Katrā, 161-n68; 248.
Kerala, 221; 222.
Khajurāho, 102.
Khotan, 112; 118; 181.
Kizil, 119; 256-n29.
Kṛṣṇanagar, 194.
Kucā, 112; 124; 144; 179-n107.
Kumārṭuli, 194.
Kumtura, 144.
Loriyān Tańgai, 252.
Lucknow, 192-n2.
Madras, 3; 107.
Mahārāṣṭra, 192.
"Maïmana", 165-n76.
Mathurā, 107; 119; 161-n68; 170-n95; 175; 175-n101; 184; 229; 248; 250; 254; 255; 256.
Mesopotamia, 230-n7.
Mīrpur-khās, 114.
Mohrā Morādu, 107; 160-n67; 171-n97; 178.
Nāgārjunakoṇḍa, 248; 248-n7.
Nālandā, 256; 256-n28.
New Delhi, 129; 140; 185-n117.
Northern India, 107.
North-West, 180-n110; 182; 188-n120.
Paitava, 252; 255.
Panjab, 127.
Paris, 3-n11; 104-n31; 129-n30; 161-n68; 231-n8.
Pārkham, 248.
Paṭnā, 249.
Persia, 125; 126.
Peshawar, 127; 178; 180-n110; 187.
Pondichery, 3-n11.
Pūri, 107.
Qol-I-Nader, 130-n31.
Rawak, 118; 119.
Rawak *Stūpa*, 119; 120.
Rawak *Vihāra*, 118.
Sāñcī, 106.
Śāntiniketan, 10; 64-n3; 194; 196-n3.
Sārnāth, 107; 225-n3; 226.
Shāh-jī-kī-Ḍherī, 133-n36; 170; 178; 180-n110; 185; 187.
Shorchuk, 112; 160; 205.
Shotorak, 131; 131-n33; 161; 178.
Sirkap, 131; 132; 178; 182; 229.
South, 256.
South Arcot, 107.
South India, 4; 4-n16; 106; 108; 145; 192; 193; 227.
Śrīnagar, 115.
Śrīraṅgam, 97.
Sultangaṃj, 256; 256-n28.
Surkh-Kaṭal, 252.
Surul, 194; 196-n3; 199; 200; 209-n7.
Taklamakan, 119.
Tarimia, 89-n30; 112; 124; 124-n29; 143-145; 147; 147-n56; 148; 150; 154; 160; 163; 164; 167; 168; 168-n86; 169-n90; 181; 192-n2; 205; 256.
Taxila, 116; 127; 132-n36; 133-n36; 134; 135; 139; 149; 155; 171; 178; 182-184.
Tell Agrab, 230-n7.
Tépé Maranjan, 130-n31; 137-n46; 140; 166; 166-n77; 178.
Thousand Buddhas, 112.
Tirukkoyilar, 107.
Trivandram, 3; 97.
Tukkuz Sarai, 160.
Tumshuk, 160.
Tun-huang, 112.
Turfan, 112; 236-n24.
Turkistan, 205.
Udyāna, 255.
Upsala, 3-n9.
Ushkar, 114-116; 116-n18; 118; 120; 133-n36; 160; 160-n67; 161-n68; 172; 177-180; 180-n110; 181; 181-n110; 182; 183; 183-n114; 184; 185; 228; 229.
Ushkur, 114.
Uttara-Pradeśa, 192; 192-n2; 237.
Vārāṇasī, 225; 225-n3.
West, 132; 236; 237.
Western India, 255.

4. INDEX OF THE NAMES OF GODS, SEMI-GODS, ETC.

Aśvinīdevau, 257.
Bhū, 46-n10.
Brahman, 42; 195.
Culakoka Devatā, 247-n2; 248.
Durgā, 65-n3; 98; 194; 195; 196-n3; 197-203; 203-n5; 206-208; 212; 215-

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

219; 219-n13.
Gandharva, 256-n29.
Gaṇeśa, 5-n21; 195; 197; 198; 200; 201; 204; 208; 237.
Hāritī, 252.
Indra, 159; 248.
Jagannātha, 107.
Jyeṣṭhā, 5-n21; 237.
Kālī, 193; 194; 201; 202; 209-n17; 217.
Kārtikeya, 195; 197; 198; 200.
Kubera, 248.
Lakṣmī, 193; 195; 197; 200; 208; 218.
Liṅga, 5-n21.
Mahākālī, 98.
Mahiṣa, 195.
Mahiṣāsura, 195; 197; 198; 200; 204.
Mahiṣāsuramardinī, 195.
Māra, 229.
Pārvatī, 195.
Piśāca, 5-n21.
Rudra, 32.
Sarasvatī, 195; 197; 200; 208; 212.
Śāstā, 5-n21; 237.
Śiva, 195; 201; 202.
Śrī, 46-n10.
Viṣṇu, 46-n10; 62-n3; 73; 74; 74-n29; 195.
Yakṣa, 168; 176; 247; 247-n2; 248; 249; 249-n8, n9.
Yakṣī, 176; 247-249; 249-n8, n9.

5. INDEX OF THE NAMES OF RELIGIOUS PERSONAGE

Ātreya, 46-n10.
Bodhisattva, 120; 138-n47; 159; 162-n71; 166; 166-n80; 168-n86, n87; 172; 173; 175; 186; 247; 248; 252.
Buddha, 113; 117; 138-n47, n48; 139-n50; 140-n51[a]; 143; 144; 146; 151; 152; 157-n64; 158; 158-n65; 159; 161; 161-n68, n69; 168; 169; 169-n90; 172; 172-n100; 173; 175; 175-n101; 176; 225; 225-n3; 228; 229; 246; 248-250; 250-n11, n12; 251; 252; 253-n23; 254; 255; 255-n26; 256.
Kāśyapa, 3.
Kauṇḍinya, 225-n3.
Kumārajīva, 181.
Mahāvīra, 246.
Nanda, 228.
Pope, 124.
Śarkarākṣa, 24-n1.
Śārkarākṣya, 24-n1.
Siddhārtha, 252.
Upagupta, 229.

6. INDEX OF THE NAMES OF HISTORICAL PERSONAGE

Alexander, 170-n95.
Bhātikābhaya, 226.
Butschikan, 118.
Confucius, 235-n24.
Dhanvantari, 257.
Harṣa, 118.
Kaniṣka, 178; 250; 250-n12; 252.
Lalitāditya, 180; 181.
Sikandar, 118.
Sūha, 118.
Udayana, 255.

7. INDEX OF THE NAMES OF PERSONS

Who Helped by Giving Information

Eckardt, Prof. Dr. Hans, 227-n5.
Deshpande, Mr. M. N., 107-n37.
Filliozat, Prof. J., 3-n11.
Fischer, Frl. Dr. Johanna, 227-n5.
Mr. Hariśaṅkara Śarmā, 64-n3.
Dr. Jan Yun-hua, 227-n5.
Mr. Kanai Sāmanta, 218-n9.
Kasugai, Prof. Shinya, 227-n5.
Frau Dr. Körner, 227-n5.
Lama, Mr. C. R., 227-n5.
Rau, Prof. Dr. Wilhelm, 220-n16; 226-n4.
Sarkar, Dr. K. K., 225-n3.
Śrīnivāsan, Mr. K. R., 29.
Śyāmāpada Hajrā, 203-n5; 204.
Venkataramanan, Dr. K., 227-n5.
Winner, Dr. Mathias, 230-n7.

8. INDEX OF THE NAMES OF ANCIENT AND MODERN AUTHORS

To Whose Names or Works a Mention is made Without Reference

Bhavadeva Bhaṭṭa, 219; 220.
Brogniart, Alexandre, 231-n8.
Bussagli, Mario, 124.
Gopāla Bhaṭṭa, 23-n18.
Grünwedel, Albert, 112; 124-n29; 144-n53.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

Europe, 22-n15; 86; 125; 136; 230-n7.
Far East, 256.
Fondukistan, 113; 113-n8; 130-n31; 133-n36; 137-n46; 140; 166; 168-n86; 178; 179; 179-n106, n107; 180-n110; 181-183; 185-188; 249; 255-n26.
Friar Bala, 248.
Gandhāra, 101; 110; 111; 113; 117; 118; 120-124; 126; 127; 130; 132; 132-n36; 133-n36; 134; 137; 139; 150; 163; 170-n95; 176; 180; 181; 184; 192-n1; 205; 233-235; 235-n22; 236; 238; 255-n26.
Gilgit, 227-n5.
Göttingen, 241-n36.
Greece, 123; 231; 231-n10.
Haḍḍa, 127; 133-n36; 145; 145-n54; 151; 161-n68; 165-n76; 182; 184; 252.
Hārvan, 114; 118.
"Haute-Koktcha", 165-n76.
Hoti Mardan, 252.
India, 1; 4-n14; 9; 11-n1; 14; 24; 35; 37; 67-n9; 95; 99; 104; 105; 107-n37; 110; 113; 125; 127; 128; 130-132; 134; 136; 140; 163; 170-n95; 176; 179-n106; 180; 180-n110; 181; 183; 185-n117; 192; 192-n1; 193; 195; 219; 219-n13; 225; 226; 230; 230-n7; 234-239; 242; 246; 251; 253; 256.
— North-West, 133-n36; 180-n110; 182.
Indonesia, 15.
Italy, 231-n10.
Jammu, 114; 115; 120; 121; 137; 140; 143; 146; 149; 150; 184; 184-n114; 188; 189; 191; 218; 223; 226; 238.
Japan, 235; 236; 238.
Jauliān, 110; 146-n55; 149; 158; 170; 171-n97; 178; 183; 188.
Kālawān, 158; 171-n97; 172; 175; 178; 183; 188.
Kansu, 235.
Kapiśa, 180-n110; 223.
Kashgar, 181.
Kashmir, 133-n36.
Kāśmīr, 114-116; 118-121; 121-n27; 129-n30; 137; 140; 143; 150; 180-182; 184; 184-n114; 188-191; 218; 223; 226; 228; 238.
Katrā, 161-n68; 248.
Kerala, 221; 222.
Khajurāho, 102.
Khotan, 112; 118; 181.
Kizil, 119; 256-n29.
Kṛṣṇanagar, 194.
Kucā, 112; 124; 144; 179-n107.
Kumārṭuli, 194.
Kumtura, 144.
Loriyān Tangai, 252.
Lucknow, 192-n2.
Madras, 3; 107.
Mahārāṣṭra, 192.
"Maïmana", 165-n76.
Mathurā, 107; 119; 161-n68; 170-n95; 175; 175-n101; 184; 229; 248; 250; 254; 255; 256.
Mesopotamia, 230-n7.
Mīrpur-khās, 114.
Mohrā Morādu, 107; 160-n67; 171-n97; 178.
Nāgārjunakoṇḍa, 248; 248-n7.
Nālandā, 256; 256-n28.
New Delhi, 129; 140; 185-n117.
Northern India, 107.
North-West, 180-n110; 182; 188-n120.
Paitava, 252; 255.
Panjab, 127.
Paris, 3-n11; 104-n31; 129-n30; 161-n68; 231-n8.
Pārkham, 248.
Paṭnā, 249.
Persia, 125; 126.
Peshawar, 127; 178; 180-n110; 187.
Pondichery, 3-n11.
Pūri, 107.
Qol-I-Nader, 130-n31.
Rawak, 118; 119.
Rawak *Stūpa*, 119; 120.
Rawak *Vihāra*, 118.
Sāñcī, 106.
Śāntiniketan, 10; 64-n3; 194; 196-n3.
Sārnāth, 107; 225-n3; 226.
Shāh-jī-kī-Ḍherī, 133-n36; 170; 178; 180-n110; 185; 187.
Shorchuk, 112; 160; 205.
Shotorak, 131; 131-n33; 161; 178.
Sirkap, 131; 132; 178; 182; 229.
South, 256.
South Arcot, 107.
South India, 4; 4-n16; 106; 108; 145; 192; 193; 227.
Śrīnagar, 115.
Śrīraṅgam, 97.
Sultangaṃj, 256; 256-n28.
Surkh-Katal, 252.
Surul, 194; 196-n3; 199; 200; 209-n7.
Taklamakan, 119.
Tarimia, 89-n30; 112; 124; 124-n29; 143-145; 147; 147-n56; 148; 150; 154; 160; 163; 164; 167; 168; 168-n86; 169-n90; 181; 192-n2; 205; 256.
Taxila, 116; 127; 132-n36; 133-n36; 134; 135; 139; 149; 155; 171; 178; 182-184.
Tell Agrab, 230-n7.
Tépé Maranjan, 130-n31; 137-n46; 140; 166; 166-n77; 178.
Thousand Buddhas, 112.
Tirukkoyilar, 107.
Trivandram, 3; 97.
Tukkuz Sarai, 160.
Tumshuk, 160.
Tun-huang, 112.
Turfan, 112; 236-n24.
Turkistan, 205.
Udyāna, 255.
Upsala, 3-n9.
Ushkar, 114-116; 116-n18; 118; 120; 133-n36; 160; 160-n67; 161-n68; 172; 177-180; 180-n110; 181; 181-n110; 182; 183; 183-n114; 184; 185; 228; 229.
Ushkur, 114.
Uttara-Pradeśa, 192; 192-n2; 237.
Vārāṇasī, 225; 225-n3.
West, 132; 236; 237.
Western India, 255.

4. INDEX OF THE NAMES OF GODS, SEMI-GODS, ETC.

Aśvinīdevau, 257.
Bhū, 46-n10.
Brahman, 42; 195.
Culakoka Devatā, 247-n2; 248.
Durgā, 65-n3; 98; 194; 195; 196-n3; 197-203; 203-n5; 206-208; 212; 215-

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

219; 219-n13.
Gandharva, 256-n29.
Gaṇeśa, 5-n21; 195; 197; 198; 200; 201; 204; 208; 237.
Hāritī, 252.
Indra, 159; 248.
Jagannātha, 107.
Jyeṣṭhā, 5-n21; 237.
Kālī, 193; 194; 201; 202; 209-n17; 217.
Kārtikeya, 195; 197; 198; 200.
Kubera, 248.
Lakṣmī, 193; 195; 197; 200; 208; 218.
Liṅga, 5-n21.
Mahākālī, 98.
Mahiṣa, 195.
Mahiṣāsura, 195; 197; 198; 200; 204.
Mahiṣāsuramardinī, 195.
Māra, 229.
Pārvatī, 195.
Piśāca, 5-n21.
Rudra, 32.
Sarasvatī, 195; 197; 200; 208; 212.
Śāstā, 5-n21; 237.
Śiva, 195; 201; 202.
Śrī, 46-n10.
Viṣṇu, 46-n10; 62-n3; 73; 74; 74-n29; 195.
Yakṣa, 168; 176; 247; 247-n2; 248; 249; 249-n8, n9.
Yakṣī, 176; 247-249; 249-n8, n9.

5. INDEX OF THE NAMES OF RELIGIOUS PERSONAGE

Ātreya, 46-n10.
Bodhisattva, 120; 138-n47; 159; 162-n71; 166; 166-n80; 168-n86, n87; 172; 173; 175; 186; 247; 248; 252.
Buddha, 113; 117; 138-n47, n48; 139-n50; 140-n51[a]; 143; 144; 146; 151; 152; 157-n64; 158; 158-n65; 159; 161; 161-n68, n69; 168; 169; 169-n90; 172; 172-n100; 173; 175; 175-n101; 176; 225; 225-n3; 228; 229; 246; 248-250; 250-n11, n12; 251; 252; 253-n23; 254; 255; 255-n26; 256.
Kāśyapa, 3.
Kauṇḍinya, 225-n3.
Kumārajīva, 181.
Mahāvīra, 246.
Nanda, 228.
Pope, 124.
Śarkarākṣa, 24-n1.
Śārkarākṣya, 24-n1.
Siddhārtha, 252.
Upagupta, 229.

6. INDEX OF THE NAMES OF HISTORICAL PERSONAGE

Alexander, 170-n95.
Bhātikābhaya, 226.
Butschikan, 118.
Confucius, 235-n24.
Dhanvantari, 257.
Harṣa, 118.
Kaniṣka, 178; 250; 250-n12; 252.
Lalitāditya, 180; 181.
Sikandar, 118.
Sūha, 118.
Udayana, 255.

7. INDEX OF THE NAMES OF PERSONS

Who Helped by Giving Information

Eckardt, Prof. Dr. Hans, 227-n5.
Deshpande, Mr. M. N., 107-n37.
Filliozat, Prof. J., 3-n11.
Fischer, Frl. Dr. Johanna, 227-n5.
Mr. Hariśaṅkara Śarmā, 64-n3.
Dr. Jan Yun-hua, 227-n5.
Mr. Kanai Sāmanta, 218-n9.
Kasugai, Prof. Shinya, 227-n5.
Frau Dr. Körner, 227-n5.
Lama, Mr. C. R., 227-n5.
Rau, Prof. Dr. Wilhelm, 220-n16; 226-n4.
Sarkar, Dr. K. K., 225-n3.
Śrīnivāsan, Mr. K. R., 29.
Śyāmāpada Hajrā, 203-n5; 204.
Venkataramanan, Dr. K., 227-n5.
Winner, Dr. Mathias, 230-n7.

8. INDEX OF THE NAMES OF ANCIENT AND MODERN AUTHORS

To Whose Names or Works a Mention is made Without Reference

Bhavadeva Bhaṭṭa, 219; 220.
Brogniart, Alexandre, 231-n8.
Bussagli, Mario, 124.
Gopāla Bhaṭṭa, 23-n18.
Grünwedel, Albert, 112; 124-n29; 144-n53.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

Hambis, L., 161-n68.
Hsüan-tsang, 226-n3.
I-tsing, 227-n5.
Kalhaṇa, 180.
Lauffer, Berthold, 112; 236-n24.
Müller, 232-n14.
Pelliot, Paul, 160; 161-n68.
Raphael (the famous Italian painter), 124.
Schrader, 4-n16.
Vedāntadeśika, 4-n14.
Veṅkaṭādhvari, 4-n14.
Vitruvius, 37-n3.
Waldschmidt, Ernst, 124; 124-n29; 241-n36.

9. INDEX OF THE NAMES OF ANCIENT AUTHORS

Whose Works Are Referred to

Daṇḍin, 19-n3.
Huei-ch'ao, 225; 226.
Karka, 242-n38.
Nityānanda, 14-n3; 243.
Pāṇini, 24; 25-n2.
Patañjali, 98-n8; 106; 107.
Rāmatīrtha, 262-n15.
Sāyaṇa, 22-n15.
Śaṅkarācārya (or Śaṅkara), 220; 220-n16; 221; 222; 227; 243.
Śrīkumāra, 3; 3-n12; 31-n2; 241; 241-n36.
Upaniṣadbrahmayogin, 14-n3; 243.

10. INDEX OF THE NAMES OF MODERN AUTHORS

Whose Works Are Referred to

Acharya, P. K., 34-n11; 77-n33.
Agrawal, O. P., 1-n3.
Andrews, F., 112; 192-n2.
Ashton, Leigh, 235-n24; 236-n24.
Auboyer, Jeannine, 23-n18.
Bagchi, P. C., 2-n8; 4-n16.
Banerjea, J. N., 2-n5; 4-n16; 23; 23-n18; 25-n2; 34-n11; 64-n1; 65-n3; 67-n9; 108-n40; 217-n8; 241; 241-n34.
Barrett, Douglas, 113; 113-n8; 132; 133-n36; 178-n104; 180-n108, n110; 181-n110; 182-185; 185-n118; 186; 187; 188-n120; 229.
Barthoux, J. J., 145-n54; 165-n76.
Binay Kumar Sarkar, 240.
Blümner, Hugo, 231-n9, n10; 232-n14, n15; 233-n17.
Böthlingk, 240.
Carl, J., 166-n77.
Church, A. H., 113-n9.
Coomaraswamy, Ananda K., 3-n12; 30; 229-n6; 240; 256.
Cunningham, Alexander, 131-n32; 178; 229.
Daya Ram Sahni, 114; 115; 116-n18; 118.
Deonna, W., 231-n9; 232-n15; 233-n18.
Diehl, Gustav, 2-n7; 3-n9.
Edgerton, 240.
Fabri, Charles, 115; 116; 116-n18; 117; 118; 120; 132; 132-n36; 133-n36; 160-n67; 175; 180; 180-n108; 182-184; 188-n120; 229.
Foucher, Albert, 110; 115; 115-n16; 132-n36; 155; 155-n63; 192-n1; 205; 235-n22.
Fuchs, Walter, 225-n3; 226-n3.
Gairola, T. R., 12-n4.
Gaṇanātha Sen, 13-n2.
Gangoly, O. C., 235-n24.
Gaurīnātha Śāstri, 219.
Geiger, Wilhelm, 226-n4; 239.
Goetz, Hermann, 113; 113-n8; 115; 115-n16.
Gopinatha Rao, 2-n5; 4-n16; 5-n21; 25-n2; 64-n1; 75; 97; 102.
Gunasinghe, 30; 93-n46.
Hackin, J., 124; 131-n33; 137-n46; 138-n48; 140; 146-n55, n56; 164-n73; 165; 166-n77-n79; 167-n82, n84; 168-n86-n88, n90; 169-n91-n93; 178; 187.
Hallade, M., 130-n31; 131-n33; 135-n40; 137-n46; 147-n56; 161-n68; 170-n95; 180; 183-186; 254; 254-n24.
Haricaraṇa Bandopādhyāya, 65-n3.
Havel, E. B., 106.
Horsch, Paul, 14-n3; 15; 259-n5.
Jan Yun-hua, 225-n3; 226-n3.
Jñānendra Mohan Das, 65-n3.
Kak, R. C., 115; 115-n12; 160-n67; 181-n110.
Kramrisch, Stella, 3; 3-n12; 4-n16; 37-n3; 93-n46.
Le Coq, Albert von, 109; 124; 144-n53; 147; 154; 160; 161-n68; 205; 235-n22.
Losch, Hans, 3-n12.
Marshall, John, 1; 110; 112; 120; 123; 124; 127; 128; 130-n31; 131-n32; 132-n36; 135; 135-n40; 136; 139; 140-n51[a]; 146-n55; 149; 151; 153-n61; 155; 155-n63; 160-n67; 164; 164-n73; 165; 166-n77; 170-175; 183; 205; 207; 229.
Medley, Margaret, 112-n5; 235-n22.
Meunié, Jacques, 146-n56.
Monier-Williams, M., 240; 262-n15.
Moran, Sherwood F., 235; 236; 238.
Nagpall, J. C., 1-n3.
Nalinaksha Dutt, 227-n5.
Nihar Ranjan Ray, 240.
Pāñcakaḍi Bandopādhyāya, 218; 220.
Panofsky, Erwin, 37-n3.
Rawson, Philip, 113; 113-n8.
Rhys Davids, 239; 240.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

Rowland, Benjamin, 112; 115; 167-n82; 169-n91; 185-n118; 235-n22; 252.
Spooner, D. B., 170; 185; 185-n117.
Stein, Aurel, 112; 119; 119-n25; 160; 161-n68; 192-n2.
Varma, K. M., 93-n46.
Walters, P., 231-n9; 232-n14.
Wheeler, Mortimer, 112; 113; 131-n33; 134-n38; 170-n95.
Winternitz, M., 4-n16.
Yogeśacandra Roy, 219.

11. INDEX OF THE NAMES OF DIFFERENT CLASSES OR BRANCHES OF LEARNING

Āgama, 2; 2-n6; 3-n9; 4; 5-n21; 10; 15; 37; 38-n4; 40-n7; 45; 61; 77; 95-n1; 96; 98-n8; 104; 107; 114; 192; 221; 222; 224; 227; 228; 230; 233; 234; 238; 242; 243; 245; 262.
Āyurveda, 13-n2; 14; 244; 257; 261.
Bhaiṣajya (the same as Āyurveda), 14.
Dhanurveda, 257.
Haṭhayoga, 15.
Nāṭyaveda, 257.
Purāṇa, 37.
Śaivāgama, 3-n9; 5-n21; 96.
Sāṃkhya, 258.
Tantra, 15.
Tripiṭaka, 259-n4; 261.
Upāgama, 3-n9.
Upaniṣad, 14; 244; 258; 258-n2; 259; 261; 264.
Vaikhānasāgama, 3; 96.
Veda, 257.
Vedānta, 258.
Yoga, 15.

12. INDEX OF THE WORKS MENTIONED WITH FULL TITLES

Without Giving Any References

Aṃśumadbhedāgama, 3; 3-n9.
Aṃśumān, 3-n9.
Haribhaktivilāsa, 2-n4; 23-n18.
Hayaśīrṣapāñcarātra, 2-n4; 23-n18; 64-n1.
Kāmikāgama, 2-n4.
Mānasollāsa, 30; 72.
Piṅgalāmata, 2-n8.
Preliminary Report, 112.
Sāmaveda, 257.
Sand-Buried Ruins, 112.
Suprabhedāgama, 2-n4; 64-n1.
Tantrasamuccaya, 3.
Technique of Gandhāran and Indo-Afghan Stucco Images, 106; 123-n28; 136; 137; 144.
Toumchouq, 161-n68.
Traité des Arts Céramiques, 231-n8.
Vinayapiṭaka, 227-n5.
Yajurveda, 257.

13. INDEX OF THE WORKS WITH FULL TITLES

To Which References Are Given

Anabhiratajātaka, 24-n1.
Ancient Khotan, 112.
Atharvaveda, 22-n15; 257.
Atrisaṃhitā, (as Samūrtārcanādhikaraṇa).
Baṅgīyaśabdakośa, 65-n3.
Bāṅglā-Bhāṣār Abhidhān, 65-n3.
Bṛhadāraṇyakopaniṣad, 243-245; 263.
Chāndogyopaniṣad, 14; 220; 260; 261.
Chavisutta, 244; 260-262.
Dattiṃsākāra, 261.
Devayājñikapaddhati, 242-n38.
Dhammapada, 261; 261-n14; 262.
Dīpikā, 262-n15.
Divyāvadāna, 229.
The Gandhāra Style, 170-n95.
Garbhopaniṣad, 259.
Hybrid Sanskrit Dictionary, 240.
Indologen-Tagung 1959, 11-n1; 241-n36.
Innermost Asia, 112.
An Introduction to the Study of Chinese Sculpture, 235-n24.
Jaiminīyopaniṣad, 260.
Jarāvagga, 261-n14.
Kāśyapajñānakāṇḍa, 4; 56; 227.
Kāśyapasaṃhitā (as Kāśyapajñānakāṇḍa).
Kāśyapaśilpa, 2-4; 14-n3; 25; 29; 30; 73; 94; 96-98; 223; 227; 241.
Kāyānupassanā, 261.
Khuddakanikāya, 24-n1.
Khuddakapāṭha, 259-n4.
Khuddakavatthu, 228-n5.
Lābhasakkārasiloko, 260.
Mahābhārata, 262.
Mahāvaṃso, 226; 239.
Maitrāyaṇyupaniṣad, 259.
Mānasāra, 3; 34-n11; 76-n33; 77-n33.
Manusaṃhitā (or Manusmṛti), 244; 262; 263.
Memoir (same as below), 139-n51; 174.
Memoirs of the Archaeological Survey of India, No. 7, 171.
Mitākṣarā, 14-n3.
Mūlasarvāstivādavinaya, 140; 227; 227-n5; 228.
Nāradaparivrājakopaniṣad, 262-n15.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

Nāṭyaśāstra, 239; 260.
Pāli Dictionary, 240.
Paṭisambhidāmagga, 259-n4.
Praśnopaniṣad, 243.
Rajjusutta, 260-262.
Ṛgveda, 14-n3; 15; 22-n15; 257.
Śabdakalpadruma, 25-n2.
Samarāṅgaṇasūtradhāra, 72.
Samūrtārcanādhikaraṇa, 4; 73; 74; 76; 96; 97; 224; 227.
Serindia, 112.
Śilparatna, 3; 3-n12; 224; 241.
Śukranītisāra, 240.
Suśrutasaṃhitā, 14; 257; 261.
Suttanipāta, 262-n16.
Suttanipāta, Vijayasutta, 259-n4.
Suttapiṭaka, 244; 260.
Taittirīyopaniṣad, 15; 260; 261.
Taxila, 110; 120; 139-n51.
Therīgāthā, 106.
Vijayasutta, 262.
Vimānārcanākalpa, 3; 25; 73; 74; 95; 221; 223; 224; 227; 228.
Vinaya, 227-n5.
Vinayakṣudrakavastu, 227-n5.

14. INDEX OF THE WORKS REFERRED TO WITH ABBREVIATED TITLES

A.A. (Vol. XXIII), 235-n23; 236-n25.
,, ,, (,, XXIV), 5-n18; 95-n1; 106-n33; 136-n42, n44; 223-n1; 240-n30.
A.A.A.O., 230-n7.
A.A.E., 230-n7.
A.A.I., 104-n31; 107-n36; 112-n7; 131-n33; 132-n35; 165-n76; 167-n82; 169-n91; 175-n101; 176-n102, n103; 185-n118; 186; 235-n22; 247-n2; 248-n7; 249-n8; 250-n11-n13; 251-n15; 252-n21, n22; 253-n23; 254-n24; 256-n28, n29.
A.B.B., 176-n102, n103.
A.B.O.R.I., 3-n12.
A.G., 232-n15.
A. I., (No. 4), 242-n37.
,, ,, (No. 6), 12-n4.
,, ,, (No. 13), 242-n37.
,, ,, (No. 15), 2-n3; 113-n9.
A.In., 107-n35 (here it is erroneously printed as A.I.).
A.I.U., 240-n28, n29.
A.K., 19-n2.
A.Kh., 113-n9; 119; 119-n25.
A.M.K., 115-n12, n13, n16; 160-n67.
Ant., 112-n6; 131-n33; 134-n38.
A.P.; V., 259-n4.
A.S., 19-n3.
A.S.I.; A.R. (1908-09), 170-n96; 185-n117.
,, ,, ,, ,, ,, (1914-15), 107-n37.
,, ,, ,, ,, ,, (1915-16), 115-n11, n13; 118-n23; 164-n73; 165-n74; 166-n77, n80; 167-n83; 171-n97.
A.S.I.; R., 131-n32.
As.S., 106-n33 (here it is erroneously printed as A.S.); 240-n30.
B.A.G., 131-n32; 132-n35, n36; 134-n37, n38; 135-n39.
B.M., 112-n5; 235-n22.
Br.Up., 14-n3; 243-n39, n41; 244; 263-n18.
B.S.M., 147-n57; 235-n22.
B.V., 219-n13-n15.
Ch.Up., 14-n3; 24-n1; 220-n16; 260-n7.
C.T., 232-n14; 233-n17.
D.A., 229-n6.
D.A.G.R., 232-n15.
D.C.A., 192-n2.
D.H.A., 77-n33.
D.H.I., 2-n4, n5, n8; 3-n9, n13; 4-n16; 23-n17, n18; 25-n2; 34-n11; 64-n1; 65-n3; 67-n9; 108-n40; 203-n4; 217-n8; 241-n33, n34.
D.N., 261-n11.
D.R.A.A., 130-n31; 137-n46; 138-n47-n49; 139-n50; 146-n55, n56; 148-n58; 157-n64; 159-n66; 162-n70, n71; 164-n72; 165-n75; 166-n77-n80; 167-n82, n84; 168-n86-n88, n90; 169-n91, n92; 179-n105.
E.H.I., 2-n4-n6; 3-n13; 4-n16; 5-n21; 25-n2; 64-n1; 75-n30; 97-n6; 102-n22, n23; 107-n39.
F.H., 145-n54; 165-n76.
F.T.Y.I.A., 113-n8; 115-n16.
G.E.L., 232-n14.
G.H., 233-n19.
G.I.L., 106-n34.
G.S., 113-n8; 130-n31; 135-n40; 137-n46; 147-n56; 161-n68; 170-n95; 175-n101; 176-n102; 180-n110; 181-n111; 184; 184-n115; 186; 248-n5; 249-n9, n10; 250-n12; 251-n16; 252-n17-n22; 253-n23; 254-n24; 255-n25, n26; 256-n28.
G.Tax., 107-n38; 120; 130-n31; 132-n35, n36; 134-n37; 135-n39; 150-n60; 171-n98.
G.Up., 259-n3.
H.A.P., 232-n14; 233-n17.
H.I.A., 106-n32.
H.I.I.A., 175-n101; 247-n2; 248-n3-n7; 249-n8; 250-n11, n13; 251-n14; 254-n24; 256-n27, n28.
H.I.L., 2-n8; 4-n16.
H.P.N.Z., 226-n3.
H.P.S., 115-n12, n13; 116-n18; 160-n67; 161-n68.
H.S.O., 147-n57.
H.T., 3-n9, n10, n12, n13; 4-n16; 37-n3.
H.U.A., 146-n56.
I.A., 242-n37.
I.E.A.I., 23-n18.
I.H.Q., 93-n46.
Im.A., 191-n121.
I.P., 2-n6, n7.
I.S.P., 106-n32.
I.Ś.P., 29-n16; 33-n10; 34-n11.
I.T.A., 235-n24.
I.T.T., 8-n2; 22-n15; 57-n29; 74-n29; 81-n8.
J.I.S.O.A., 2-n8.
J.Up., 260-n8.
K.J.K., 5-n19; 25-n2; 28-n15; 31-n2; 45-n7; 46-n10; 48-n13; 54-n24; 56-n26, n27; 61-n1; 66-n5; 70-n17, n18; 72-n24; 87-n19; 88-n25; 89-n28; 92-n43, n45; 99-n9; 103-n27.
K.N., 259-n4; 261-n13, n14; 262-n16.
K.Ś., 3-n9, n12; 11-n1-n3; 12-n5; 13-n1; 14-n3; 16-n4-n9; 17-n10, n14-n20; 18-n21; 19-n1-n4; 20-n5, n6, n8-n10; 21-n11-n14; 22-n15; 25-n2, n3, n5; 26-n6, n7, n9, n10; 27-n11, n12; 28-n13, n14; 31-n2-n7; 32-n8, n9; 33-n10; 34-n11; 44-n5, n6; 45-n7; 46-n10; 48-n13; 49-n16; 50-n18; 52-n22; 54-n24; 55-n25; 61-n1, n3;

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh .

62-n3; 63-n8; 66-n5, n6; 67-n7-n9; 68-n11, n12; 69-n14-n16; 70-n17, n20; 71-n23; 72-n24; 75-n32; 80-n2, n3, n6; 82-n9; 84-n11, n12; 85-n13, n14; 86-n16, n17; 87-n20; 88-n21-n24; 89-n27, n29, n30; 90-n30-n35; 91-n36-n41; 92-n42-n46; 93-n47, n48; 94-n49; 96-n2, n3; 98-n8; 99; 99-n9; 100-n12-n18; 101-n20; 102-n26; 103-n26; 104-n30.
K.Ś.S., 242-n38.
Kṣ.Up., 14-n3.
L.L.O., 144-n53.
L.N.D.M., 230-n7.
Maitri Up., 262-n15.
M.A.S.I., 110-n1; 129-n31; 139-n51; 140-n51[a]; 143-n52; 155-n63; 171-n97; 192-n1; 235-n22.
M.Bh., 262-n17.
Mg., 114-n10; 115-n13, n15, n16; 116-n18, n19; 117-n20, n21; 118-n22; 120-n26; 132-n36; 157-n64; 160-n67; 180-n108, n109; 182-n112; 183-n114.
M.G.A., 37-n2.
M.N., 261-n11.
MS, 3; 3-n11; 11-n1; 13-n1; 16-n4-n6, n8; 17-n11, n15-n20; 18-n21; 19-n1-n3; 20-n5, n8-n10; 21-n11-n13; 22-n14, n15; 25-n5; 26-n6, n7, n10; 27-n11, n12; 28-n13, n14; 31-n4-n7; 32-n9; 34-n11; 42-n3; 45-n7; 49-n16; 50-n17; 52-n22; 55-n25; 56-n28; 61-n3; 62-n5; 67-n9; 68-n12; 71-n23; 75-n32; 80-n6; 82-n9; 84-n12; 85-n13; 86-n16; 88-n21-n24; 89-n27, n29, n30; 90-n32; 91-n37-n39, n41; 92-n42, n43, n45, n46; 93-n47, n48; 94-n49; 96-n2, n3; 100-n12, n17; 101-n20; 103-n26; 227-n5.
M.Sa., 262-n15.
MSS, 19-n3; 27-n12; 227-n5.
M.S.V. (Gilgit MSS), 65-n4; 227-n5.
,, ,, ,, ; sN.E., 227-n5.
,, ,, ,,; T.E., 227-n5.
,, ,, ,,; T.T., 227-n5.
M.T.M.P., 22-n15.
M.Up., 259-n5.
M.V., 226-n4.
,, ,, (Eng.), 226-n4.
M.V.A., 37-n3.
N.R.A.B., 130-n31; 131-n33; 137-n46; 139-n50; 146-n55; 164-n73; 166-n77, n81; 167-n83, n84; 168-n85, n86, n88, n89; 169-n90, n93, n94.
N.Ś., 239-n27; 260-n10.
O.A. (Vol. III), 113-n8; 133-n36; 178-n104; 180-n108, 110; 182-n113; 184-n116; 185-n117, n118; 188-n120.
,, ,, (Vol. IV), 113-n8.
P.B.R., 218-n9; 219-n10, n11.
P.P., 219-n12.
P.Ś., 13-n2.
P.Up., 14-n3; 243-n40.
S.A.A., 5-n18-n22; 11-n3; 25-n2; 28-n15; 31-n2; 45-n7; 46-n10; 48-n13; 54-n24; 56-n26, n27; 61-n1; 66-n5, n6; 67-n8; 68-n11, n12; 70-n17; 72-n24; 74-n29; 76-n33; 87-n20; 89-n25, n28; 92-n43; 93-n47; 96-n4; 97-n7; 98-n7; 99-n9; 100-n11, n13-n18; 101-n19; 102-n24, n25; 103-n29; 104-n30.
S.E.D., 12-n4; 15 (here it is erroneously printed as E.S.D.); 24-n1.
Ser., 112-n4; 161-n68.
S.N., 260-n9.
Ś.N.S. (Eng.), 240-n31.
Ś.R., 3-n12; 13-n1; 16-n4-n9; 17-n10, n12-n20; 18-n21; 19-n1-n4; 20-n5, n6, n8, n9; 21-n10-n14; 22-n15; 26-n6, n9, n10; 27-n12; 31-n2; 39-n5; 40-n6; 44-n6; 45-n7; 47-n11; 49-n16; 50-n18; 52-n20, n22; 55-n25; 61-n3; 62-n5; 66-n6; 67-n7, n9; 68-n10-n12; 69-n14-n16; 70-n20; 71-n23; 72-n24; 75-n32; 80-n2, n3, n5; 83-n9; 84-n11, n12; 85-n13, n14; 86-n16, n17; 87-n20; 89-n26; 91-n39; 92-n42; 241-n35.
Śś., 261-n12.
S.S., 19-n1-n3; 33-n10.
S.T., 2-n6; 4-n16.
S.T.A., 231-n9; 232-n15; 233-n18.
Str., 130-n31; 131-n33; 137-n45; 146-n55, n56; 161-n69.
Tax., 1-n1; 110-n2; 118-n24; 129-n31; 131-n32; 132-n34, n35; 135-n40, n41; 136-n43; 139; 139-n51; 140-n51[a]; 146-n55; 151; 153-n61; 155-n63; 160-n67; 161-n68; 164-n73; 165-n74; 166-n77, n80; 171-n97, n98; 172-n99, n100.
T.G.I.S., 155-n63.
T.G.K.G.R., 231-n9, n10; 232-n11-n14; 233-n17, n20; 234-n21; 237-n26.
T.N.A., 229-n6; 240-n32.
T.P.I., 30-n1; 93-n46.
T.S.F.F.A., 3-n12; 30-n1.
T.T.G., 106-n34.
T.Up., 260-n6.
V.A.K., 3; 4; 4-n17; 5-n18, n21, n22; 7-n1; 11-n3; 12-n5; 14-n3; 25-n2, n3; 26-n6, n9, n10; 27-n12; 31-n2; 32-n8; 33-n10; 34-n11; 42-n2; 43-n4; 45-n7, n8; 46-n10; 50-n17; 53-n23; 54-n24; 56-n27; 59-n30; 61-n1, n2; 62-n3-n6; 63-n7, n8; 66-n5, n6; 67-n8; 68-n10, n11; 70-n17, n21; 72-n24; 75-n32; 76-n33; 85-n15; 86-n17; 87-n19, n20; 89-n25, n28; 92-n43; 93-n47; 96-n4; 97-n7; 98-n7; 99-n10; 101-n21; 102-n24, n25; 103-n29; 104-n30.
V.D., 93-n46.
V.D.P., 93-n46.
V.G.Ś.L., 14-n3; 259-n5.
V.I.J., 226-n3.
V.M.B., 106-n33.
V.R.I.B.T., 132-n36; 235-n22.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

BIBLIOGRAPHY AND ABBREVIATIONS

A.A. *Artibus Asiae*, Ascona, Switzerland,

a) Vol. XXIII, No. 1, 1960, (pp. 41-66), *Structural Features of Clay Sculpture of the Nara Period*, by Sherwood F. Moran.

b) Vol. XXIV, No. 2, 1961, (pp. 117-132), *The Rôle of Polychromy in Indian Statuary*, by K. M. Varma.

A.A.A.O. *Art and Architecture of Ancient Orient*, by Henri Frankfort, Pelican History of Art, Penguin Books, 1st Edn., 1954.

A.A.E. *Art and Architecture of Egypt*, by W. Stevenson Smith, Pelican History of Art, Penguin Books, 1st Edn., 1958.

A.A.I. *Art and Architecture of India*, by Benjamin Rowland, Pelican History of Art, Penguin Books, 1st Edn., 1953.

A.B.B. *Les Antiquités bouddhiques de Bāmiyān*, by A. Godard, Y. Godard and J. Hackin, (Mémoires de la Délégation archéologique Française en Afghanistan, Tome II,) Les Éditions G. van Oest, Paris, 1928.

A.B.O.R.I. *Annals of the Bhandarkar Oriental Research Institute*, Vol. XXXI, 1950 (published in 1951), Poona, (pp. 152-164) *Sources of Śrīkumāra's Śilparatna*, by Hans Losch.

A.G. *Die Antiken Gemmen*, Vols. I (Plates) and II, by Adolf Furtwängler; Giesecke and Devrient, Leipzig and Berlin, 1899.

A.H.K. *Aṣṭāṅga-Hṛdaya-Kośa*, by K. M. Vaidya, Trichur, 1936.

A.I. *Ancient India*, (Bulletin of the Archaeological Survey of India), Edt. and Pd. by the Director General of Archaeology in India, New Delhi,

a) No. 4 (Double Number), July 1947 - January 1948, (pp. 180-310), *Brahmagiri and Chandravalli 1947: Megalithic and other Cultures in the Chitaldrug District, Mysore State*, by R.E.M. Wheeler.

b) No. 6, January 1950, (pp. 103-107), *The Red Paint, Lime-washes and Plasters on Bhuvaneswar and Konārak Temples*, by T.R. Gairola.

c) No. 13, 1957, (pp. 5-142), *Maski 1954: A Chalcolithic Site of the Southern Deccan*, by B. K. Thapar.

d) No. 15, 1959, (pp. 94-99), *Examination and Preservation of a Painted Stucco Head*, by J. C. Nagpall and O. P. Agrawal.

A. In. *The Art of India*, by Stella Kramrisch, The Phaidon Press, London, 1954.

A.I.U. *The Age of Imperial Unity*, General Editor, K. M. Munshi, Bhāratīya Vidyā Bhavana, Vol. 2, 2nd Edn., Bombay, 1953. Chapter XX, *Art*, Section C, by Nihar Ranjan Roy.

A.K. *Amarakośa* (=*Nāmaliṅgānuśāsana*), by Amarasiṃha, in 4 parts, Trivandram Sanskrit Series Nos. 38, 43, 51 and 52, 1914, 1915 and (the last two) 1917 respectively, with the commentary, *Ṭīkāsarvasva* of Vandyaghaṭīya Sarvānanda and parts 2-3 with another commentary, *Amarakośodghāṭanā* of Kṣīrasvāmin, Trivandrum.

A.Kh. *Ancient Khotan*, Vol. I, text and Vol. II, plates, by M. Aurel Stein, Clarendon Press, Oxford, 1907.

A.M.K. *Ancient Monuments of Kashmir*, by Ram Chandra Kak, India Society, London, 1933.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

Ant. — *Antiquity*, Vol. XXIII, Gloucester, 1949. *Romano Buddhist Art: an Old Problem restated*, by R.E.M. Wheeler (pp. 4-19).

A.P.; V. — *Abhidhammapiṭaka; Vibhaṅga*, Pāli Publication Board, Nālandā, 1960.

A.S. — *Avantisundarī*, by Daṇḍin, Anantaśayana Sanskrit Series No. 172, Trivandrum, 1954.

A.S.I.; A.R. — *Archaeological Survey of India; Annual Report*, Edited by Sir John Marshall; Superintendent Government Printing, India, Calcutta,

a) 1908-09 (published in 1912), (pp. 38-59), *Excavations at Shāh-jī-kī-Dherī*, by D.B. Spooner.

b) 1914-15 (published in 1920), (pp. 97-131), *Excavations at Sārnāth*, by H. Hargreaves.

c) 1915-16 (published in 1918), (pp. 1-38, Pls. I-XXVI), *Excavations at Taxila*, by John Marshall.

d) ibid. (pp. 49-78, Pls. XXXV-XLVII), *Pre-Muhammadan Monuments of Kashmir*, by Daya Ram Sahni.

A.S.I.; R. — *Archaeological Survey of India; Reports* (for the years 1862-63, 64 and 65), Vol. II, by Alexander Cunningham, Simla, 1871 (Printed at the Govt. Central Press).

As. S. — *Asiatische Studien* (Études Asiatiques), Vol. XV, Nos. 3-4, Bern, 1962. *The Art Medium of Śaubhika-s and its Nature*, by K.M. Varma (pp. 95-109).

A.V. — *Atharvavedasaṃhitā*, with Sāyaṇa's *Bhāṣya* and Hindī commentary, Sanātanadharma Press, Muradabad, *Saṃvat* 1986 (=1928-29 A.D.).

B.A.G. — *The Buddhist Art of Gandhāra*, by Sir John Marshall, Cambridge, 1960.

B.K.G.M. — *Bilderatlas zur Kunst- und Kultur- Geschichte Mittelasiens*, by A. von Le Coq, Dietrich Reimer/ Ernst Vohsen, Belrin, 1925.

B.M. — *The Burlington Magazine*, Vol. CII, No. 689, August 1960, London.

Br.Up. — *Bṛhadāraṇyakopaniṣad*,

a) with Nityānanda's commentary, *Mitākṣarā*, Ānandāśrama Sanskrit Series No. 31, Ānandāśrama Press, Poona, 1895.

b) The same with the Upaniṣadbrahmayogin's commentary, *Bṛhadāraṇyakopaniṣadvivaraṇa*, included in "*Daśopaniṣadaḥ*" Vol. II, Adyar Library, Madras, 1936.

c) The same with the Śaṅkara's *Bhāṣya*, 2nd Edn., Ashtekar and Co., Poona, 1928.

B.Ś.K. — *Baṅgīya-Śabda-Kośa*, by Haricaraṇa Bandopādhyāya, Calcutta, Bengali year 1344 (1937).

B.S.M. — *Die Buddhistische Spätantike in Mittelasien*, erster Teil, Die Plastik, by Albert von Le Coq, Dietrich Reimer (Ernst Vohsen) Verlag, Berlin, 1922.

B.V. — *J. N. Banerjea Volume*, (A collection of articles by his friends and pupils presented on his retirement from Carmichael Professorship of Ancient Indian History and Culture, University of Calcutta), Calcutta, 1960. *The Worship of the Clay Image of Durgā*, by Gaurīnātha Śāstri (pp. 266-270).

Ch.Up. — *Chāndogyopaniṣad*, with Śaṅkara's *Bhāṣya* and Ānandagiri's *Ṭīkā*, Ānandāśrama Sanskrit Series, No. 14, Ānandāśrama Press, Poona, 1913.

C.T. — *Catalogue of the Terracottas* (in the Dept. of Greek and Roman Antiquities, British Museum), by H. B. Walters, London, 1903.

D.A. — *Divyāvadāna*, edited by P. L. Vaidya, Buddhist Sanskrit Texts No. 20, The Mithila Institute, Darbhanga, 1959.

D.A.G.R. — *Dictionnaire des Antiquités grecques et romains*, by Ch. Daremberg et Edm. Saglio, Tome Premier, Deuxième Partie (C), Librairie Hachette, Paris, 1877.

D.C.A. — *Descriptive Catalogue of Antiquities*, by Fred. H. Andrews, Manager of Publications, Delhi, 1935.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

D.H.A.	*A Dictionary of Hindu Architecture*, by P.K. Acharya, Oxford Press (printed in Allahabad), (according to the Preface) 1927.
D.H.I.	*Development of Hindu Iconography*, by Jitendra Nath Banerjea, 2nd revised Edn., University of Calcutta, Calcutta, 1956.
D.N.	*Dīghanikāya*, Vols. II and III, Pāli Publication Board, Nālandā, 1958.
D.R.A.A.	*Diverses Recherches archéologiques en Afghanistan* (1933-40), by J. Hackin, J. Carl, J. Meunié (Mémoires de la Délégation archéologique Française en Afghanistan, Tome VIII), Paris, 1959.
E.H.I.	*Elements of Hindu Iconography*, by T.A. Gopinatha Rao, Vol. I, Pts. 1-2, 1914, Vol. II, Pts. 1-2, 1916, The Law Printing House, Mount Road, Madras.
F.H.	*Les Fouilles de Haḍḍa*, Vols. I and III, by J. J. Barthoux, [Mémoires de la Délégation archéologique Française en Afghanistan, Tome IV (and VI ?)] Paris, 1930 and 1933 respectively.
F.T.Y.I.A.	*Five Thousand Years of Indian Art*, by Hermann Goetz, (Art of World Series, Halle Verlag, Baden-Baden, Germany) Tarapurevala Sons and Co., 210, Dr. D. Naoroji Road, Fort. Bombay, 1959.
G.E.L.	*Greek-English-Lexicon*, by Henry George Liddel, Robert Scott, Revised, new (ninth) edition, reprinted, Oxford, 1951.
G.H.	*Die Gotische Holzfigur*, by Hubert Wilm; J.B. Metzlersche Verlagsbuchhandlung, Stuttgart, 1942.
G.I.L.	*Geschichte der Indischen Literatur*, Vol. II, Pt. 1, by M. Winternitz, C. F. Amelang Verlag, Leipzig, 1913.
G.S.	*The Gandhāra Style (and Evolution of Buddhist Art)*, (translated into English by Diana Imber from a French book: *Inde, Un millénaire d'Art bouddhique*,) by Madeleine Hallade; Thames and Hudson Ltd., London, 1968; the publisher of the French version: Office du livre, Fribourg, 1968.
G.Tax.	*A Guide to Taxila*, by Sir John Marshall, 4th Edn., Cambridge, 1960.
G.Up.	*Garbhopaniṣad*, included in the *Upaniṣadāṃ Samuccayaḥ*, Poona, 1895.
H.A.P.	*History of Ancient Pottery* (based on the work of Samuel Birch), 2 Vols., by H. B. Walters; John Murray, London, 1905.
H.I.A.	*A Handbook of Indian Art*, by E. B. Havell; John Murray, London, 1920.
H.I.I.A.	*History of Indian and Indonesian Art*, by Ananda K. Coomaraswamy; Edward Goldston, London; Karl W. Hiersemann, Leipzig and E. Weyhe, New York, 1927.
H.I.L.	*A History of Indian Literature*, by M. Winternitz (English Translation by Mrs. S. Ketkar), Vol. I, University of Calcutta, Calcutta, 1927.
H.P.N.Z.	*Huei-ch'ao's Pilgerreise durch Nordwestindien und Zentral-Asien um 726*, by Walter Fuchs, Sonderausgabe aus den Sitzungsberichten der Preussischen Akademie der Wissenschaften, Philosophische-Historische Klasse, 1938, XXX, Verlag der Akademie der Wissenschaften, Berlin, 1939.
H.P.S.	*Handbook of the Archaeological and Numismatic Sections of the Śrī Pratāp Singh Museum, Srinagar*, by Ram Chandra Kak; Thacker, Spink and Co., Calcutta, 1923.
H.S.O.	*Auf Hellas Spuren in Ost Turkistan*, by A. von Le Coq; J.C. Hinrichs'sche Buchhandlung, Leipzig, 1926.
H.T.	*Hindu Temple*, 2 Vols., by Stella Kramrisch, University of Calcutta, Calcutta, 1946.
H.U.A.	*Histoire universelle des Arts*, Vol. IV (which Vol. is named separately as "Arts musulmans Extrême-Orient), Paris, 1939. A section of this Vol. (Livre IV, Chapitre 1) dealing with Central Asian Art is written by J. Hackin with the title: L'art indien et l'art iranien en Asie Centrale (pp. 255-270).

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

I.A.	*Indian Archaeology* — A Review for 1954-55, Dept. of Archaeology, Govt. of India, New Delhi, 1955.
I.E.A.I.	*Introduction à l'Étude de l'Art de l'Inde*, by Jeannine Auboyer, Serie Orientale Roma XXXI, Istituto Italiano per il Medio ed Estremo Oriente, Roma, 1965.
I.H.Q.	*Indian Historical Quarterly*, Vol. XXXIII, No. 1, March 1957, Calcutta, *Parallel Values and Ideals of Indian Art*, by K. M. Varma (pp. 1-10).
Im. A.	*Innermost by Asia*, Vols. 4, by Sir Aurel Stein, Oxford, 1928.
I.P.	*Instrument and Purpose* (Studies on rites and rituals in South India), by Carl Gustav Diehl; CWK Gleerup, Lund, 1956.
I.S.P.	*Indian Sculpture and Painting*, by E. B. Havell, 1st Edn., John Murray, London, 1908.
I.Ś.P.	*Iśānaśivagurudevapaddhati*, Pt. 4, by Īśānaśivagurudeva Miśra, Anantaśayana Sanskrit Series, No. 83, Trivandrum, 1925.
I.T.A.	*Indian Terracotta Art*, by O. C. Gangoly, Rupa and Co., 15, Bankim Chatterjee Street, Calcutta-12, Calcutta (Allahabad, Bombay), 1959.
I.T.T.	*Die Indische Technik der Tonbildnerei*, by K. M. Varma, Berlin, 1961 (printed photomechanically in 200 copies, Author).
J.I.S.O.A.	*Journal of Indian Society of Oriental Art*, Vol. XI, Calcutta, 1943. *On the Canon of Image-Making, Piṅgalāmata, Ch. IV*, by P.C. Bagchi (pp. 9-31).
J.Up.	*Jaiminīyopaniṣad*, included in "*Aṣṭādaśa-upaniṣadaḥ*", Vaidika-Saṃśodhana-Maṇḍala, Poona, 1958.
K.J.K.	*Kāśyapajñānakāṇḍa* or *Kāśyapa-saṃhitā*, edited by Pandit R. Pārthasārathi Bhaṭṭācār, published in Śrī Veṅkaṭeśvara Oriental Series No. 12, S.V. Oriental Institute, Tirupati, 1948.
K.N.	*Khuddakanikāya*, Vol. I, 1959; Vol. III, Pt. 1, 1959; Vol. V, 1960; Pāli Publication Board, Nālandā.
K.Ś.	*Kāśyapaśilpa*, edited by Kṛṣṇarāya Vajhe, published in Ānandāśrama Sanskrit Series No. 95, Ānandāśrama Press, Poona, 1926.
K.Ś.S.	*Kātyāyanaśrautasūtra*, with Karka's commentary, 1939 and with another commentary called, *Devayājñikapaddhati*, 1933, both Edns. are published in Chowkhamba Sanskrit Series, Banaras.
Kṣ.Up.	*Kṣurikopaniṣad*, included in the *Upaniṣadāṃ samuccayaḥ*, Ānandāśrama Sanskrit Series 29, Ānandāśrama Press, Poona, 1895.
L.L.O.	*Von Land und Leuten in Ostturkistan*, by Albert von Le Coq, zweite unveränderte Auflage, Verlag der J.C. Hinrichs'schen Buchhandlung, Leipzig, 1928.
L.N.D.M.	*Das Leben der Niederländischen und Deutschen Maler*, by Carel von Mander, Textabdruck nach der Ausgabe von 1617, Übersetzung und Anmerkungen von Hans Floerke, Vol. II, München und Leipzig, 1906.
M.	*Mānasāra*, Vol. III (Sanskrit text), edited by P. K. Acharya, Oxford Press (printed in Allahabad), (according to the Preface) 1933.
Maitri Up.	*Maitri Upaniṣad* (included in the "*Upaniṣadāṃ Sammuccayaḥ*") with Rāmatīrtha's commentary, *Maitryupaniṣad-Dīpikā*, Ānandāśrama Sanskrit Series No. 29, Ānandāśrama Press, Poona, 1895.
M.A.S.I.	*Memoirs of the Archaeological Survey of India*, No. 7, published under the name of Sir John Marshall with the title: *Excavation at Taxila, The Stupas and Monasteries at Jauliāñ*, several sections of it were written by various authors, of which the one entitled: *The Decoration of the stuccoed Stupas* (pp. 22-39) is by A. Foucher, Calcutta, 1921.
M.Bh.	*Mahābhārata*, (*Śāntiparva, Mokṣadharma*, Fascicule 22), Bhandarkar Oriental Research Institute, Ponna, 1951.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

Mg.	*Marg*, Vol. VIII, No. 2, March 1955, Marg Publications, Bombay.
	a) *Akhnur Terracottas*, by Charles Fabri (pp. 53-64).
	b) *The Mediaeval Sculpture of Kashmir*, by Hermann Goetz (pp. 65-75).
M.G.A	*Maithilī Śaraṇ Gupta Abhinandan Granth*, edited by Vāsudev Śaraṇ Agrawala, Calcutta, 1959, *Prācīn Śilpiyoṃ kā Śārīr Parijñān*, by K.M. Varma (pp. 908-924).
M.N.	*Majjhimanikāya*, Vols. II and III, Pāli Publication Board, Nālandā, (both) 1958.
M.Sa.	*Manusaṃhitā*, with Kullūka's commentary, *Mānavārthamuktāvalī*, 10th Edn., Nirṇaya Sāgara Press, Bombay, 1946.
M.S.V.	*Mūlasarvāstivāda-vinaya*, Gilgit MSS Vol. III, Pt. 1, 1947; Pt. 2, 1942; Pt. 3, 1943, edited by Nalinaksha Dutt with the assistance from Śivanāth Sharma. The Kashmir Series of Texts and Studies, Research Department, Srinagar.
M.S.V.; sN.E.	*Mūlasarvāstivāda-vinaya* (Tibetan Translation) sNar-Thang Edn., *Vinaya*, Vol. 10.
M.S.V.; T.E.	*Mūlasarvāstivāda-vinaya* (Chinese Translation), Taisho Edn., No. 1451, Vol. XXIV.
M.S.V.; T.T.	*Mūlasarvāstivāda-vinaya* (Tibetan Translation), *Tibetan Tripiṭaka*, (bKa-ḥGyur, ḥDul-Ba IV), (12th Bam-Po), Vol. XLIV, Tokyo-Kyoto, 1958.
M.T.M.P.	*The Materials and Techniques of Medieval Painting*, by Daniel v. Thomson, Dover Publications Inc., New York, 1956.
M.Up.	*Maitrāyaṇyupaniṣad*, included in "*Aṣṭādaśa-upaniṣadaḥ*", Vaidika-Saṃśodhana-Maṇḍala, Poona, 1958.
M.V.	*Mahāvaṃso*, edited by Wilhelm Geiger, published for the Pāli Text Society, Luzac and Co. Ltd., 46 Great Russell Street, London W.C. 1, (Reprint) 1958; First impression, Pāli Text Society, London, 1908 (Oxford University Press, Warehouse, Amen Corner E.C.).
M.V. (Eng.)	*Mahāvaṃso* (in English Translation), translated by Wilhelm Geiger assisted by Mabel Haynes Bode, Pāli Text Society, London, 1912, Oxford University Press, Amen Corner, E.C.
M.V.A.	*Meaning of Visual Arts*, by Erwin Panofsky, Doubleday and Company Inco., New York, 1955.
N.P.Up.	*Nāradaparivrājakopaniṣad*, included in the "*Īśādiviṃśottaraśatopaniṣadaḥ*", Nirṇaya Sāgara Press, Bombay, 1948.
N.R.A.B.	*Nouvelles Recherches archéologiques à Bāmiyān*, by J. Hackin, J. Carl (Mémoires de la Délégation archéologique Française en Afghanistan, Tome III) Les Éditions G. van Oest, Paris, 1933.
N.Ś.	*Nāṭyaśāstra*, by Bharata, with Abhinavagupta's commentary, *Abhinavabhāratī*, edited by M. Ramakrishna Kavi, Baroda, Vol. II, 1934 (Gaekwad's Oriental Series, No. LXIII), Vol. III, 1954 (same Series, No. CXXIV), Oriental Institute, Baroda.
O.A.	*Oriental Art*, The Oriental Art Magazine, Ltd., 125 High Halborn, London W.C. 1; Editorial Office: Museum of Eastern Art, Oxford.
	a) (New Series) Vol. III, No. 2, Summer 1957 (pp. 54-59), *Sculptures of Shāhi Period*, by Douglas Barrett.
	b) (New Series) Vol. IV, No. 4, Winter 1958 (pp. 136-43), *The Methods of Indian Sculpture*, by Philip Rawson.
P.B.R.	*Pāñckaḍi Bandopādhyāyer Racanābalī*, edited by Brajendranātha Bandopādhyāya and Sajanikānta Das, Baṅgīyasāhityaparişat, Calcutta, 3rd Impression, Bengali Year, 1370 (1963).
P.P.	*Pūjā-Pārbaṇa*, by Yogeśacandra Roy, Viśva-Bhāratī Granthālay, Calcutta, Bengali Year 1358 (1951).
P.R.J.	*Preliminary Report on a Journey of Archaeological and Topographical Exploration in Chinese Turkestan*, by M.A. Stein, published under the authority of H.M.'s Secretary of State for India in Council, printed by Eyre and Spottiswoode, H.M.'s Printer (East Harding Street, E.C.), London, 1901.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

P.Ś.	*Pratyakṣaśārīram*, by Gaṇanātha Sen, 3rd Edn., Calcutta, 1924.
P.Up.	*Praśnopaniṣad*, (included in the "*Daśopaniṣadaḥ*", (Vol. I), with the commentary of Upaniṣad-brahmayogin, *Praśnopaniṣadvivaraṇa*, Adyar Library, Madras, 1935. The same (except Br.Up.) with Śaṅkara's *Bhāṣya*, 2nd Edn., Ashtekar and Co., Poona, 1927.
R.V.	*Ṛgvedasaṃhitā*, with Sāyaṇa's *Bhāṣya*, Tilak Maharashtra University, Vaidic Saṃśodhan Maṇḍal, Poona, 1933 (?).
S.A.A.	*Samūrtārcanādhikaraṇa* or *Atrisaṃhitā*, edited by V. Raghunāthacakravarti Bhaṭṭācārya and M. Rāmakṛṣṇa Kavi, published in Śrī Veṅkaṭeśvara Oriental Series No. 6, S.V. Oriental Institute, Tirupati, 1943.
S.A.G.T.	*Studien zur archaisch-griechischen Tonbildnerei in Kreta, Rhodes, Athen und Böotien*, by Peter Knoblauch; Carl Nieft Buchdruckerei und Verlag, Halle (S), 1937.
S.E.D.	*Sanskrit English Dictionary*, by Monier Monier-Williams, Oxford, reprinted 1951.
Ser.	*Serindia*, Vols. 5, by Sir Aurel Stein, Oxford, 1921.
Ś.K.	*Śabdakalpadruma*, by Rājā Rādhākāntadeva, improved by Varadāprasāda Vasu and Haricaraṇa Vasu, Calcutta, [Śakābda 1808, (i.e. 1886 A.D.) onwards].
S.N.	*Saṃyuttanikāya*, Vol. II, Pāli Publication Board, Nālandā, 1959.
Ś.N.S. (Eng.)	*Śukranītisāra* (in English translation), translated by Binoy Kumar Sarkar, 2nd Edn., published from the Pāṇini Office in the Sacred Books of Hindus Series No. XIII, Allahabad, 1923.
Ś.R.	*Śilparatna*, by Śrīkumāra, Part 2, edited by K. Sāmbaśiva Śāstri, published in Trivandrum Sanskrit Series No. XCVIII, Trivandrum, 1929.
S.R.K.	*Sand-buried Ruins of Khotan*, by M. Aurel Stein, T. Fisher Unwin, Paternoster Square, London, 1903.
Sś.	*Suśrutasaṃhitā*, by Suśruta, Nirṇaya Sagara Press, Bombay, 1915.
S.S.	*Samarāṅgaṇasūtradhāra*, by Bhoja, Vol. I and II, Gaekwad's Oriental Series Nos. XXV and XXXII, 1924 and 1925 respectively, Baroda.
S.T.	*Studies in Tantras*, Part 1, by Prabodh Chandra Bagchi, University of Calcutta, Calcutta, 1939.
S.T.A.	*Les Statues de Terre Cuite dans l'Antiquité*, by W. Deonna, Albert Fontemoing, Éditeur, Paris, 1908.
Str.	*Shotorak*, by Jacques Meunié, (Mémoires de la Délégation archéologique Française en Afghanistan, Tome X), Les Éditions d'Art et d'Histoire, Paris, 1942.
Tax.	*Taxila*, Vols. 3, by Sir John Marhall, Cambridge, 1951.
T.G.I.S.	*Technique of Gandhāran and Indo-Afghan Stucco Images*, by K. M. Varma, shortly to be published.
T.G.K.G.R.	*Technologie und Terminologie der Gewerbe und Künste bei Griechen und Römern*, by Hugo Blümner, Vol. I (1st Edn., Pt. 1, 1874, Pt. 2, 1875) 2nd and revised Edn., 1912; Vol. II, 1879; Vol. III, 1884; Vol. IV, Pt. 1, 1886, Pt. 2, 1887; Verlag von B.G. Teubner, Leipzig and Berlin.
T.N.A.	*Transformation of Nature in Art*, by Ananda K. Coomaraswamy, 2nd Edn., reprinted, Dover and Company Inc., New York, 1956.
T.P.I.	*La Technique de la Peinture indienne*, by Siri Gunasinghe, Annales du Musée Guimet, Presses Universitaires de France, Paris, 1957.
T.S.F.F.A.	*Technical Studies in the Field of the Fine Arts*, Vol. III, No. 2, published for the Fogg Art Museum, Harvard University, U.S.A., Oct., 1934, *Technique and Theory of Indian Painting*, by Ananda K. Coomaraswamy (pp. 59-89).

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

T.T.G.	*Thera- and Therī- Gāthā*, edited by Herrmann Oldenberg and Richard Pischel respectively, The Pāli Text Society, London, 1883.
T.Up.	*Taittirīyopaniṣad*, with the Śaṅkarācārya's *Bhāṣya*, *Upaniṣadbhāṣyam*, Vol. II, Pt. 1; Ashtekar and Co., Poona, 1927.
V.A.K., M.Edn.	*Vimānārcanākalpa*, edited by Prayāgadāsajī, V. Raghunāthacakravarti Bhaṭṭācārya and S. Mādhavācārya, printed in Śrī Veṅkaṭeśvara Press, Madras, 1926.
V.A.K., I. Edn.	as above, edited by Rompicarla Bhaṭṭar Śrīnivāsācārya, published by D. Raṅgācārya in Śrīvaikhānasagranthamālā No. 15, printed in Telugu script, Īgāvāripālem. (Chengalput Dist., Madras State), 1927.
V.A.K., T.Edn. (V.A.)	as above, but published with a different title: *Vaikhānasāgama*, edited by K. Sāmbaśiva Śāstri, published in Trivandrum Sanskrit Series No. CXXI, Trivandrum, 1935.
V.D.	*Viṣṇudharmottara* (the same as below, but in English translation) translated by Stella Kramrisch, Calcutta University, Calcutta, 1924.
V.D.P.	*Viṣṇudharmottarapurāṇa* (3rd *khaṇḍa*), edited by Pandit Madhusūdana and Mādhavaprasāda Śarmā, Śrī Veṅkaṭeśvara Press, Bombay, 1912.
V.G.Ś.L.	*Die Vedische Gāthā-* und *Śloka- Literatur*, by Paul Horsch, Francke Verlag, Bern, 1966.
V.I.J.	Viśveśvarānand Indological Journal, Vol. IV, Pt. ii (September) 1966, Hoshiarpur. *The Korean Record on Vārāṇasī and Sārnāth*, by Jan Yun-hua, (Viśveśvarānand Indological Papers Series — 185) Viśveśvarānand Institute, P.O. Sadhu Ashram, Hoshiarpur (India).
V.M.B.	*Vyākaraṇamahābhāṣya*, by Patañjali, edited by Franz Kielhorn, Bombay, Vol. I, 1880, Vol. II, 1882.
V.R.I.B.T.	*La Vieille Route de l'Inde de Bactres à Taxila*, Vols. I and II, by A. Foucher, (Mémoires de la Délégation archéologique Française en Afghanistan, Tome I) Les Éditions d'Art et d'Histoire, Paris, 1942 and 1947 respectively.

FURTHER ABBREVIATIONS

A.S.I.	=	Archaeological Survey of India, New Delhi.
Fig.	=	Figure.
Figs.	=	Figures.
I.M.	=	Indian Museum, Calcutta.
MS.	=	Manuscript.
MSS.	=	Manuscripts.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

PLATES

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

LIST OF ILLUSTRATIONS

As far as the archaeological material is concerned, this list is somewhat unconventional on account of the introduction of the element of some discussion in it with references to various writings. It is thought useful to do so, for there has been a gross misunderstanding or even total unawareness of the existence of the unbaked clay images of ancient times, and the future workers may easily find certain material in it, which may enable them to clear the ground further.

FRONTISPIECE: Tri-Colour Plate:

Panel of clay images: Durgā, as Mahiṣāsuramardinī with demon and deities. Place: village, Surul, Dist. Bīrbhūm, West Bengal, Sarkār Family, Baḍo Bāḍī. Modelled and photographed in September and October 1968 respectively. (For further details, see *supra*, p. 196, Ch. XIV, footnote 3.)

Section 1

PLATES I-VII OR FIGURES 1-17

Clay Image According To The Ancient Theory

As the individual captions indicate, all these Figs. illustrate the different stages of modelling the clay image to be fashioned according to the technique explained in Chs. I-XI on the basis of the *Āgama* texts. These photographs are in the author's collection, and in fact these were taken by him while he made an experiment of modelling an image according to the said technique. The image is supposed to be modelled with seven different materials to represent the seven elements of a living body, but some of these are left out in this experiment as indicated in the descriptions of the following Figs. (For further details, see *supra*, p. 10).

PLATE I

Fig. 1: Component parts of the wooden armature, representing the bones, with which an image can be modelled in any posture (see Figs. 2, 15 and 17 and Chs. VIII and X).

PLATE II

Fig. 2: Armature of a standing image assembled provisionally with the components seen in Fig. 1.

Fig. 3: The same as above, but fixed permanently by cementing the elements of legs in the holes of pedestal and by tying the joints with copper plates and wire, besides adding the copper plates of the proper shape to the feet. (A kind of varnish representing the fat, is supposed to be coated over the wooden armature, but left out in this experiment.)

PLATE III

Fig. 4: Single rope made of coconut fibres without knots, which represents the system of major arteries and veins running through the whole body from head to toes.

PLATE IV

Fig. 5: Rope (seen in Fig. 4) is tied on the armature lengthwise, the ends are still untrimmed.

Fig. 6: Back view of the Fig. 5, but with the trimmed ends of the rope.

Fig. 7: Ropes, representing the minor arteries and veins, are tied around the armature over the vertical course of the ropes. A net in the head region and an eight-petalled lotus in the area of the chest are formed to hold the heavy masses of clay.

Fig. 10: Copper plates of appropriate shape are inserted into the clay to support the ears.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

PLATE V

Fig. 8: Clay representing the flesh, is coated over those ropes as seen in Fig. 7.

Fig. 9: Second course of ropes wound clock-wise over the first coat of the clay (Fig. 8).

Fig. 10: See Pl. IV.

Fig. 11: Finished after further coats of clay. (According to the original technique, final coats are to be given with a paste made of unburnt lime-stones (pebbles) representing the blood. Then the cloth representing the skin, is to be pasted, on which the colours representing the life, are to be painted, but these items are left out in this experiment and the image is finished by applying only the simple clay in the places of also the said materials.)

PLATE VI

Fig. 12: Front three-quarter view of the Fig. 11.

Fig. 13: Right profile view of the Fig. 11 with "support" visible.

Fig. 14: Back three-quarter view of the Fig. 11 with "support" visible.

PLATE VII

Fig. 15: Armature of sitting figure assembled with the same components as seen in Pl. I.

Fig. 16: Assemblage of some components of the armature, which belong to the trunk; but the side elements of this frame should run obliquely, as in Fig. 15, etc., instead of vertically. The curved hooks on both sides of the upper and lower elements are more distinct, to which the components representing the bones of the arms and legs respectively are attached.

Fig. 17: Armature of a reclining image built with the same components as seen in Pl. I, but several small "supports" fixed in the platform hold it from below instead of one big "support" fixed in the wall behind in the case of standing and sitting postures.

SECTION 2

PLATES VIII-XV OR FIGURES 18-35

ARCHAEOLOGICAL FINDS

Abbreviations: A.S.I. = Archaeological Survey of India, New Delhi,
I.M. = Indian Museum, Calcutta,

from which the respective photographs are obtained: Figs. 25-28, 31 and 35 are from the latter while the rest are from the former. Of these the Fig. 35 is a real terracotta while the rest are the fragments of unbaked clay images, although some of these, for instance, Figs. 30, 33, etc. have been hitherto reported to be terracottas. Archaeologists and art historians have been in a habit of naming these even as stuccos, for which there is no reason at all; there is some reason — though not quite justified — to call some of these as terracottas, for they were accidentally baked, when different monuments became the objects of conflagration and hence, they were found in the burnt form in the excavations. For our arguments proving them to be originally unbaked clay images, see *supra*, Ch. XIII.

ERROR: While the captions of the Figs. 22 and 23 are in the correct places, the illustrations, however, are reversed in print by a mistake, so the reader is requested to look at the present Fig. 23 while reading the caption of the Fig. 22 and *vice versa*. In order to indicate this fact a question mark is added in the text, within the brackets, whenever these Figs. are referred to.

PLATE VIII

Fig. 18: Seated Buddha with adorers (*in situ*). A group of unbaked clay images turned into terracottas by an accidental fire. Jauliān, monastery, inside court, west veranda, alcove in front of the cell 1 (the width of

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

the alcove being between 4′.7″ and 2′.2″; M.A.S.I., No. 7, p. 17, Para. 3). 5th Cent. A.D.; A.S.I., Photo-archives, Photo No. Frontier Province Vol. IX, P. 1763/1917-18, its caption reads: "Jaulian, Taxila, Hazara, Niche 10, Cell 1"; the specification of the niche in this caption as bearing No. 10 may be a mistake; if not, it is not known to us according to which system this is specified so. Published in M.A.S.I., No. 7, Pl. XVIa, see the list of plates, where the group is described to be of clay images; for further details, vide p. 17, Para. 4, *et seq* and p. 19, Para. 5. One special feature deserving a mention here may be the way in which the seat or alter (*pīṭha*) of the Buddha is constructed. The regular lines seen in the photograph give the impression that at least the top of this seat is built by laying the wooden planks of varying widths very closely in course of the width of the seat (depth from spectator's point of view). As a matter of fact, the grains in the broken corner below the Buddha's right knee clearly indicate it, and a comparison with the neighbouring group (ibid., Pl. XVIb) strengthens the view by not having the same appearance. This suggests that the flames of the accidental fire did not actually reach this specific spot for inexplicable reasons, though here too the heat might have been sufficient to harden the clay of the images.

Fig. 19: Lower part of the seated Buddha image, *in situ*. Reported to be terracotta, but technical features betray that it has received the heat from an accidental fire only. Mohrā Morādu, monastery, alcove in front of cell No. ?). 4th-5th Cent. A.D.; A.S.I., Photo-archives, Photo No. Punjab Vol. XXIV, I. 193/1915-16. Its caption reads: "Taxila, Mohramoradu, Torso seated terracotta Buddha figure in niche in front of cell, in monastery". Marshall discusses the decorative features of this monastery in Tax., Vol. I, pp. 360-61, where he mentions the groups of the figures to have existed in front of the cells: 1, 2, 5, 7, 11, 12 and 23. He adds further that "Some of these groups were of stucco, others of terracotta" and of the latter, only detached pieces were found lying in the courtyard. For unknown reasons he follows in this case a different method from the Jauliān monastery, in which case he specifies many aspects of the groups. Hence nothing could be supplimented to the information available from the caption of the photograph, quoted above.

PLATE IX

Fig. 20: Seated Buddha with adorers, *in situ*. Kālawān, monastery, court of cells B, chapel numbered 20 and built in front of chamber or cell 21, situated W NW of the court (see plan in Tax., Vol. III, Pl. 72); 5th century A.D.; A.S.I., Photo-archives, Photo No. Punjab Vol. XLIX, 17/1932-33. Its caption runs:, "Taxila, Kalawan site. Group sculptures with their heads as recovered from clearance". This is the same group that was published in Tax. Vol. III, Pl. 77 a; see Pl. 78 a and b for its close up views, and for their description, vide Vol. I, pp. 337-38 and Vol. II, Ch. 24, p. 470, items 173, etc.

PLATE X

Fig. 21: Standing Buddha with adorers, *in situ*, the group not yet fully cleared up. Unbaked clay turned to be terracotta on surface by an accidental firing. Jauliān, monastery, inside court, west veranda, alcove in front of cell 29, the width of the alcove being 4′. 7″, 5th century A.D.; A.S.I., Photo-archives, Photo No. Frontier Province Vol. IX, P. 1765/1917-18; 44/67 Misc. Its caption runs: "Jaulian, Taxila, Hazara, niche in cell No. 29, before repairs". For detailed description of this group, see M.A.S.I., No. 7, pp. 17-18, and for Marshall's dating of the majority of the Jauliān images in the 5th Cent. A.D., see Tax., Vol. I, p. 370, Para 2, Vol. II, p. 524, Paras. 2-3, etc.

Fig. 22: This figure was erroneously printed in the place of the Fig. 23, so observe the Fig. 23 while going through the following description.

The same as above, but partly repaired and the wall at the back was reconstructed for support, though some clearing is still to be done. A.S.I., Photo-archives, Photo No. Frontier Vol. IX, P. 1766/1917-18. Its caption reads: "Jaulian, Taxila, Hazara, niche in cell 29, after repairs". This is the same photograph which was published in M.A.S.I., No. 7, Pl. XVIIa.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

PLATE XI

Fig. 23: This figure was erroneously printed in the place of the Fig. 22, so observe the Fig. 22 while going through the following description.

The same as Fig. 21, but completely cleared up and restored, *in situ*. A.S.I., Photo-archives, Photo No. Punjab Vol. XXXIV, 72/1926-27; 49/67, Misc. Its caption runs: "Taxila, Jaulian, A set of sculptures in the monastery having been now removed to the museum".

The background in this picture gives the impression that this group was still *in situ*, when it was photographed, though the whole area was more cleaned and repairs were effected more than in the previous illustration. If it is so, the statement in the caption quoted that it was removed to the museum, seems to be a confusion made between this and the next photograph bearing the No. 73 in the same Vol., which is described to be "A colossal sculpture in the monastery now being removed to the new museum", although there is a slight difference in phrasing: here it is simply "museum" while in the other "new museum".

Fig. 24: The same as Fig. 21, but removed to the Taxila Museum. A.S.I., Photo-archives, Photo No. Punjab Vol. XLVII, 281/1931-32. Its caption reads: "Taxila Museum, clay group showing Buddha in the attitude of protection (Abhay-mudra) attended by Bodhisattvas, devas, etc. from Jaulian, 4th-5th Century A.D." Leaving all the photographs taken *in situ*, Marshall reproduces, in his Tax., Vol. III, Pl. 139, this very photograph which has been taken after the group has been removed to the Taxila Museum, and in this re-arrangement the composition appears to have lost its compactness considerably.

There are two more photographs in the same archive showing the details of the same group, which should be taken note of here on account of their peculiar captions. The one bearing the No. Punjab Vol. XLVII, 282/1931-32 shows the lower right quarter of the present group. Its caption, however, reads: "Taxila museum. Details of a figure in the burnt clay group from Jaulian. The man with pleated cap is the donor beside him, his wife." Here the noteworthy point is that this group is described to be "burnt clay", which means terracotta whereas in the above caption it is stated to be simply "clay group", obviously meaning unburnt clay. Still peculiar is the description of the other photograph, bearing the No. Frontier Province Vol. IX, P. 1767/1917-18. This shows only the so-called *Mleccha* couple, but its caption runs: "Jaulian, Taxila, Hazara, Mlechha figure in stucco." Now the point is that it is described to be stucco, but there is no doubt that this group was originally of unbaked clay and turned to be terracotta by an accidental fire, which Marshall clearly stated (see Tax., Vol. II, p. 471, item 181). Thus the captions are meaninglessly inconsistent.

PLATE XII

Fig. 25: A female head. Unbaked clay, but slightly hardened on account of the heat it received in accidental fire. (*stūpaprākāra* ? i.e. the compound wall of the *Stūpa* court), Akhnur, Jammu, 6th Cent. A.D. Dimensions: Height 18.2 cm., Width 15 cm and Depth 12.6 cm. This is added to the collections of the I.M. in 1935 (see *supra*, p. 115, Para. 2 and footnote 14 of Ch. XIII). Accession No. A 23310, Registration No. 9483. According to the No. given in the "Photography Unit" of the said museum, its negative bears the No. 3148. Several details given above are based on the information supplied by the authorities of the said museum while certain aspects are explained here differently. To indicate only the difference, the relevant points from their information are quoted here: "Red terracotta human head with ornamented hair dress, noted for its delicate modelling; a Gāndhāra sculpture. Provenance: Akhnur Monastery, Jammu. Date or period: 3rd-4th Century A.D."

Fig. 26: Side view of the Fig. 25. I.M. Its negative No. 3149.

PLATE XIII

Fig. 27: Back three-quarter view of the Fig. 25. I.M. Its negative No. 3150

Fig. 28: Section at the neck of the Fig. 25. I.M. Its negative No. 3151,

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

PLATE XIV

Fig. 29: Head of a deva or Bodhisattva (?). Unbaked clay "burnt on surface to terracotta" by an accidental firing. Height 12″. Jauliān, monastery, inside the court, west veranda, alcove in front of cell 27 (the width of the alcove being between 4′.7″ and 2′.2″; M.A.S.I., No. 7, p. 17, Para. 3). Hence (monastery being specified as F in the plan) its find No. or Registered No., as is said, is F. 27. 5th century A.D. There are three photographs of this head in the Photo-archives of the A.S.I., having the following Nos. and captions:

1. Punjab Vol. L, 450/1932-33; its caption runs: "Taxila Museum, Stucco head of a Buddha (?) XIVb. 134." This is the one reproduced here.
2. Punjab Vol. XLVII, 262/1931-32; its caption reads: "Taxila museum Jn 16-F 27. Clay head of a lay man."
3. Frontier Province Vol. IX, I. 167/1917-18; its caption runs: "Jaulian, Taxila, Hazara, terracotta and stucco heads, Nos. 7, 53."

That the first two photographs were taken after the head was sent to the Taxila Museum is indicated by several factors: volume specification, the captions and the years, apart from the fact that the head is seen in them fixed on a socle, bearing the No. XIVb. 134 (which is included in the caption of the first item and in the second item it is visible only very faintly; that part of the socle, however, is not included in our reproduction). This explains that this is a number given in the museum and both of the photographs were perhaps later than Jauliān *Memoir* (No. 7, 1921). In the caption of the second item there is also another No. "Jn 16-F 27". For what the numeral, 16 stands is not clear; but the "Jn" is an abbreviation for Jaulian, and F. 27, as explained already, is the Find No. The third photograph referred to contains two heads, of which the one lying on the right side (i.e. according to common practice the left side), is the stucco head, as its very appearance undoubtedly indicates and should bear the No. 7 according to the normal way of specification. The remaining one, i.e. the head under discussion should be the terracotta according to this caption and bear No. 53. It is not clear which system the No. 53 or even the 7 of the stucco head, should represent. In spite of it there is nothing wrong in believing that this is the very head, which has been published by Marshall (M.A.S.I., No. 7, Pl. XXIVb, see p. 51, Serial No. 3 in the list of clay objects). The only difference that can be noted is that there is a thin crack running obliquely all along the length of the face on the right side of the nose, in Marshall's reproduction, whereas it is not seen in the photograph mentioned last (item 3, above). Even if both of these were different photographs, there could be no doubt that both of them were taken *in situ*, and this is suggested by their slight inclination to the backwards, as against the forward inclination in the first two items, caused by the fixation on the socle. Moreover, not much argument is necessary here, for the very appearance indicates that all these photographs are of the same head, though taken from different angles. A comparison between the first (reproduced here) and the last (or the one similar to it published by Marshall) of the three photographs referred to would reveal it at once. This sets aside all the doubts about the real medium of this head, viz. it is nothing but unbaked clay. Yet this very head is described in the captions quoted above in three different ways: once, as stucco, then as clay head, thereby implying it to be an unbaked clay head, and lastly, terracotta. When it is described to be clay head, it seems that the people have adhered to the specification of its original medium in the said *Memoir*; while it is specified to be terracotta, they seem to depend on the state in which they have seen it at that very moment. When it is described to be stucco, people seem to depend on their ignorance of the difference between clay and stucco. This would explain how excellently art has been studied already for several decades.

Fig. 30: Head of female (?). Reported to be terracotta, but, as its technical aspects indicate, it was originally an unbaked clay turned to be terracotta by an accidental fire. Taxila, Dharmarājika Stūpa, Chapel S^6 on the western side of the main *Stūpa*; 4th century A.D. A scale was included in the photograph, though that area was excluded in the present reproduction, and accordingly the head, in the present broken state, measures $7\frac{1}{2}$″. A.S.I., Photo-archives, Photo No. Punjab Vol. XXIII, I. 104/1915-16. Its caption reads: "Taxila, Dharmarajika stupa, Terracotta head, No. 321." The No. 321 in the caption is the Find No., as can

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

be known from A.S.I.; A.R., 1915-16, p. 10, list of terracottas, item 18, which is described as follows: "Head, $7\frac{1}{2}''$ high, badly damaged. Ornamental turban. S^6. 2′.6″ b.s. No. 321." No further details are available from the brief treatment of the site in the said Report.

PLATE XV

Fig. 31: Head of a youth. Unbaked clay, but slightly hardened on account of the heat it received in an accidental fire. (*Stūpa-prākāra* ? i.e. the compound wall of the *Stūpa* court) Akhnur, Jammu. 6th century A.D. Dimensions: Height 12.5 cm, Width 10.8 cm and Depth 7.2 cm. This as well as Fig. 25 (Figs. 26, 27 and 28 being different views of the same) have been acquired by the authorities of the I.M. in 1935 (see *supra*, p. 115, Para. 2 and footnote 14 of Ch. XIII). Accession No. A 23309, Registration No. 9484. According to the No. given in the "Photography Unit" of the said museum, its negative bears the No. 3147. Several above details are based on the information supplied by the authorities of the said museum, though certain aspects are differently explained here. To indicate the difference, only the relevant points from their information are quoted here: "Description: Red terracotta human head with curling hair, a Gāndhāra piece. Provenance: Akhnur monastery, Jammu. Date or period: 3rd-4th Century A.D."

Fig. 32: Two male devotees (*in situ*). Unbaked clay turned into terracotta only on the surface by an accidental fire. Jauliān, Chapel E 1, just right to the entrance of monastery (and between the monastery and the Lower Stūpa Court containing cells and indicated by C). 5th century A.D. Height in their present damaged state, is over 2′, as the scale in the photograph indicates. A.S.I., Photo-archives, Photo No. Frontier Province Vol. VIII, P. 1582/1916-17; 37/67. Its caption reads: "Jaulian, Taxila, Hazara, clay figure to left of No. 1581" (the caption of the P. 1581 runs: "Jaulian, Hazara, stucco images in niche to left of main entrance of monastery, another view"; here the left is from the spectator's standpoint). Published in M.A.S.I., No. 7, Pl. XIIb, for the description of the group, see pp. 12-13. One of the two images, viz. holding the flower basket was also reproduced in Tax., Vol. III, Pl. 138p (also see Vol. II, p. 472, Para. 2 and Vol. I, pp. 377-78), but the difference is that it was photographed after it had been removed to the Taxila Museum and the restoration work had been done. (See *supra*, p. 140, Ch. XIII, footnote 51^a.)

Fig. 33: Head of a *deva*. Reported to be a terracotta, but in all likelihood an unbaked specimen converted into terracotta by an accidental fire. Mohrā Morādu. 4th-5th centuries A.D. (Marshall appears to suggest the 4th century A.D. for the images coming from this site, see Tax., Vol. I, p. 358, Para. 2 and p. 361, Para. 3). Height 4.5″. A.S.I., Photo-archives, Photo No. Punjab Vol. XLVII, 252/1931-32. Its caption runs: "Taxila Museum MM/15. 313 (?). Terracotta head of a female figure". Here the abbreviation MM is the one adopted by Marshall for Mohrā Morādu with the second m in lower case, but it is not known for what 313 stands. (Does it stand for the Find No. ?) It is obviously carelessness on the part of those who have written the caption to describe the head to be of a female figure, also because Marshall clearly specified it to be a *Deva's* head in the place referred to below. This head is the same as published in Tax., Vol. III, Pl. 138k, which is photographed from three-quarter angle, for its description, see Vol. II, p. 471, item 180 and also Vol. I, p. 361, Para. 1.

Fig. 34: Male head. Unbaked clay "burnt on surface to terracotta" by an accidental fire. "Traces of white lime wash". Jauliān, from south-west corner of monastic quadrangle. Height $4\frac{7}{8}''$. 5th century A.D.; A.S.I., Photo-archives, Photo No. Punjab Vol. XLVII, 268/31-32. Its caption runs: "Taxila Museum, Jn. 16-197a. A clay head, perhaps of Vajrapani". For what this 16 stands is not clear, though Jn means Jauliān while 197a is the find No. See M.A.S.I. No. 7, p. 51, item No. 4 of the list of objects. Published by Marshall, ibid. Pl. XXVe as well as in Tax., Vol. III, Pl. 138,*l*, for its description, see Vol. II, p. 472, item 183.

Fig. 35: Back view of a broken terracotta figurine. Kosam (being ancient or Sanskrit Kauśāmbī, near Allahabad), U.P. Date uncertain. Dimensions: Height 16 cm, Width 13 cm and Depth 5.5 cm. In the collection of the I.M. Accession No. A 20776 (K—13), Registration No. 7530. Negative No. 3145. Most of this information is supplied by the authorities of the said museum.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

Section 3

PLATES XVI-XXII OR FIGURES 36-60

Modern Practice As Seen In Bengal

Unless specified otherwise, these photographs were taken by the author in 1956 in a village: Bhubanḍāṅgā, very close to Śāntiniketan and situated on the side of the main road leading to Goālpāḍā village from the Railway Station of Bolpur town in the Dist. Bīrbhūm, West Bengal. For the details, see *supra*, Ch. XIV.

PLATE XVI

Fig. 36: Back-wooden-frame and the cores of straw bound against it. These cores are of a panel of images: Durgā, as Mahiṣāsuramardinī with demon and accompanying deities; Place: village, Surul, about two miles from Bolpur town on the main road leading to Suri, the Dist. Head Quarters, and almost at the equal distance from Śāntiniketan, Dist. Bīrbhūm, West Bengal, Sarkār Family, "Choṭo Bāḍī" (see *supra*, Ch. XIV, footnote 3), photographed in 1966, but these cores were made earlier, some time in the previous years.

Fig. 37: Left side view of the Fig. 36, further details are the same as above.

Fig. 38: Similar as Fig. 36, Place: village, Bhubanḍāṅgā, photographed in 1956 while the cores were being tied. In this village the cores are made every year anew.

Fig. 39: Straw core of the upper part of the body of Mahiṣāsura, Bhubanḍāṅgā, 1967. Here the speciality is the fashioning of the core of the head with the help of a dowel at the neck region, hence the head is modelled at its own spot, which is not quite common practice, for often the heads are made separately either by hand throughout or with the help of a mould, which in both the cases remain hollowed and then attached to the neck which is shaped with the help of a dowel or the dowel as its central and strengthening element.

PLATE XVII

Fig. 40: Bamboo armature of the image of the goddess, Kālī, Bhubanḍāṅgā, 1967. A small core of the same goddess prepared in the previous year is seen in front of it.

Fig. 41: Back view of the core prepared by tying the straw over the bamboo armature seen in Fig. 40. Further details are the same as above.

Fig. 42: Same as Fig. 38, one coat of clay is given on the straw core, except on the legs of the figure on the right top corner; on the legs of the figure on the left top corner also it is not yet properly coated. Cracks have appeared after it got dried, as seen on the thighs of the male figure in the front and on the body of the lion, and these will be repaired and then a further coat of clay is given. Bhubanḍāṅgā, 1956.

PLATE XVIII

Fig. 43: Modelling of the heads separately by hand throughout for the images in Fig. (38 or) 42. Two instruments — one is of bamboo slit and the other is of wood — are seen on the wooden plank in the foreground. Bhubanḍāṅgā, 1956.

Fig. 44: Instruments and heads as in Fig. 43. Noteworthy point of the modelled heads is that they are hollowed from the bottom, as seen here. Bhubanḍāṅgā, 1956.

Fig. 45: Stucco moulds in upper row and, in lower row, the clay casts of ornaments taken from them. The moulds were prepared some years earlier, but the casts were taken in 1967 when the both were photographed. Bhubanḍāṅgā.

PLATE XIX

Fig. 46: Same as Fig. 45 in every respect, with the only difference that the second moulds in both the rows are made of unbaked clay; even the one in the right row has broken at its left end.

Fig. 47: Mould made of unbaked clay, prepared two or three years earlier than 1967, when it is photographed. Bhubanḍāṅgā.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

Fig. 48: Clay cast of the mask of the face, taken from the mould in Fig. 47 in 1967, when it is photographed. This was cast at the present writer's wish, but with ordinary clay without being prepared properly, as may be better noticed from its back view in Fig. 49; hence it is an indifferent and crude work, and as such it cannot represent normal standards, according to which the clay is prepared carefully and very fine as may be noticed from the Fig. 50 which represents the quality of average work or the standard.

Fig. 49: Back view of the Fig. 48 and hence all the remarks made there apply to this; so much thickness of the cast, particularly of the side walls is unusual, which should be accounted for the bad clay employed; the normal thickness and the fine quality of the clay may be observed in Fig. 50.

Fig. 50: Top view of the mask of the face cast in clay (unbaked); the face is towards top in the illustration and a sheet of clay of equal thickness is later added to the mask when it is still wet (as in Fig. 55), and this sheet, though flat, is supposed to be the back of the head, on which it rests in the illustration. It is in the collection of the Kalā-Bhavana Museum of the Viśva-Bhāratī University, bearing the entry No. 1.7; Z. 4 or 3275 according to the old and new inventories respectively. Provenance: a ward in Calcutta, called *Kumārṭuli* (i.e. Potters' Ward). Dimensions: $5.2'' \times 5\frac{1}{2}''$, width and height respectively.

PLATE XX

Fig. 51: Mould made of stucco, noteworthy point of which is the inclusion of the ears as well as a part of the hair-dress in it. Prepared a few years earlier than 1967, when it is photographed. Bhubanḍāṅgā.

Fig. 52: A cast taken in clay from the mould in Fig. 51 in 1967, when it is also photographed. The ornament seen in the mould falling from the hairdress on the upper central part of the forehead, is cut out after the cast is taken. This cast too, like the one in Fig. 48, is prepared at the instance of the present writer, and hence the remarks made there with regard to the clay, apply to it. Bhubanḍāṅgā.

Fig. 53: Back view of the cast seen in Fig. 52. This too originally has a cavity, as in Fig. 49, with thin walls, but when it is still wet, it is covered with a sheet of clay; a hole is left at the bottom to let the dowel pass through. Bhubanḍāṅgā, 1967.

Fig. 54: One of the heads seen in Fig. 43 and modelled separately by hand throughout is attached to the central image (goddess, Durgā) in the panel, seen in Fig. 42, first by driving a bamboo dowel, around which the clay is added to form the neck and then by jointing it to the top of the neck. Bhubanḍāṅgā, 1956.

Fig. 55: Similar work as seen in Fig. 54, but from the back. Only difference is that the former is a modelled head, while it is a cast mask, to the back of which a sheet of clay is attached, the sheet which helps the better joint of it with the neck. The bamboo dowel is visible in the centre of the cavity of the head. Whether cast or modelled, the head in this present practice of Bengal, is hollowed, and hence the dowel has no connection with it, for it does not touch the former. The function of the dowel is thus to give strength to the mass of the clay forming the neck on which the hollowed head rests. Bhubanḍāṅgā, 1967.

PLATE XXI

Fig. 56: Pasting of the cloth with the thick liquid clay as medium throughout the planes of the bodies of the images, i.e. excepting on ornaments or folds of drapery, etc. This is done after the images are fashioned in two coats of clay and further thin coat of fine clay, viz. the slip is given. Bhubanḍāṅgā, 1956.

Fig. 57: Attachment of the ornaments, which are mostly casts (like those seen in Figs. 45 and 46), on the images found in Figs. 38 and 42. With this the entire work with clay is over. Bhubanḍāṅgā, 1956.

Fig. 58: Back view of the image on the right upper corner in the panel in Fig. 57.

PLATE XXII

Fig. 59: Grounding for colour with white on the images seen in Fig. 57. Bhubanḍāṅgā, 1956.

Fig. 60: Panel of clay images: Durgā, as Mahiṣāsuramardinī with demon and deities, seen successively in Figs. 38, 42, 57 and 59, but complete with full colouring and other decoration. Bhubanḍāṅgā, 1956.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

CLASSIFIED INDICES: INDEX 15

INDEX OF ILLUSTRATIONS

Frontispiece, 172-n100; 194; 195; 196-n3; 209-n7; 215.
Pl. I, 42-45; 47; 48; 50-58; 66; 68; 88.
,, II, 46; 49-52; 55-58; 66; 69.
,, III, 13.
,, IV, 56-58.
,, V, 56.
,, IX, 151; 172.
Figs. 1-17, 10.
Figs.18-24, 146.
Figs.21-24, 129; 158.
Figs.25-28, 150; 155.
Figs.29-30, 146.
Fig. 2, 51; 53; 55; 67; 69.
Fig. 3, 51; 55; 69; 70.
Fig. 5, 81; 83-85.
Fig. 6, 69; 83-85.
Fig. 7, 82; 85.
Fig. 8, 86; 156.
Fig. 9, 86; 156.
Fig. 10, 57; 89.
Fig. 11, 66; 89.
Fig. 12, 89.
Fig. 13, 58; 89.
Fig. 14, 58; 89.
Fig. 15, 52; 54; 55; 57; 69; 72.
Fig. 16, 44; 45; 47-49; 57; 71; 72.
Fig. 17, 43; 46; 51; 53; 55; 57; 73; 74.
Fig. 18, 151; 174.
Fig. 19, 151; 174.
Fig. 20, 158; 174.
Fig. 21, 128; 146; 150; 158-n65; 159.
Fig. 22, (? see its description in the list of illustrations) 128; 146; 150; 159.
Fig. 23, (? see its description in the list of illustrations) 128; 159.
Fig. 24, (=21, 22 and 23,) 110-n3; 128.
Fig. 25, (=26, 27 and 28,) 115; 146; 149; 154; 156; 160; 162; 164; 172; 174; 175; 184.
Fig. 26, 149; 156; 160; 163; 172; 174; 175; 184.
Fig. 27, 149; 162; 172; 174; 175.
Fig. 28, 117; 139; 140; 145; 149; 152; 156; 163; 171-175; 184.
Fig. 29, 110; 152; 153; 157; 157-n64; 160; 164; 174.
Fig. 30, 152; 153; 157; 159; 174; 175.
Fig. 31, 115; 146; 149; 154; 156; 160; 164; 172; 175.
Fig. 32, 140-n151[a]; 146; 150; 153; 161; 164.
Fig. 33, 120; 129; 149; 154; 156; 160; 164; 165; 175.
Fig. 34, 149; 154; 156; 159; 159-n66; 164; 165; 175.
Fig. 35, vide (p. XIII) Addendum.
Fig. 36, 65-n3; 143; 194; 195; 196-n3; 197; 200-202; 204; 209; 209-n7; 211.
Fig. 37, 65-n3; 194; 195; 196-n3; 197; 198; 200; 201; 209-n7.
Fig. 38, 65-n3; 195; 196-n3; 197; 201; 203-n5; 204; 209.
Fig. 39, 143; 201; 204.
Fig. 40, 65-n3; 194; 202; 209-n7.
Fig. 41, 65-n3; 194; 201; 202.
Fig. 42, 143; 199; 204; 208; 210; 211.
Fig. 43, 157; 203-n5; 204-206.
Fig. 44, 204-206.
Fig. 45, 212.
Fig. 46, 212.
Fig. 47, 206.
Fig. 48, 206; 207-n6.
Fig. 49, 206.
Fig. 50, 206; 207.
Fig. 51, 206; 207.
Fig. 52, 155; 207.
Fig. 53, 207.
Fig. 54, 206; 210.
Fig. 55, 207; 209; 210.
Fig. 56, 89; 211.
Fig. 57, 206; 211-213.
Fig. 58, 218.
Fig. 59, 206.
Fig. 60, 195; 206; 212; 214; 215.

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

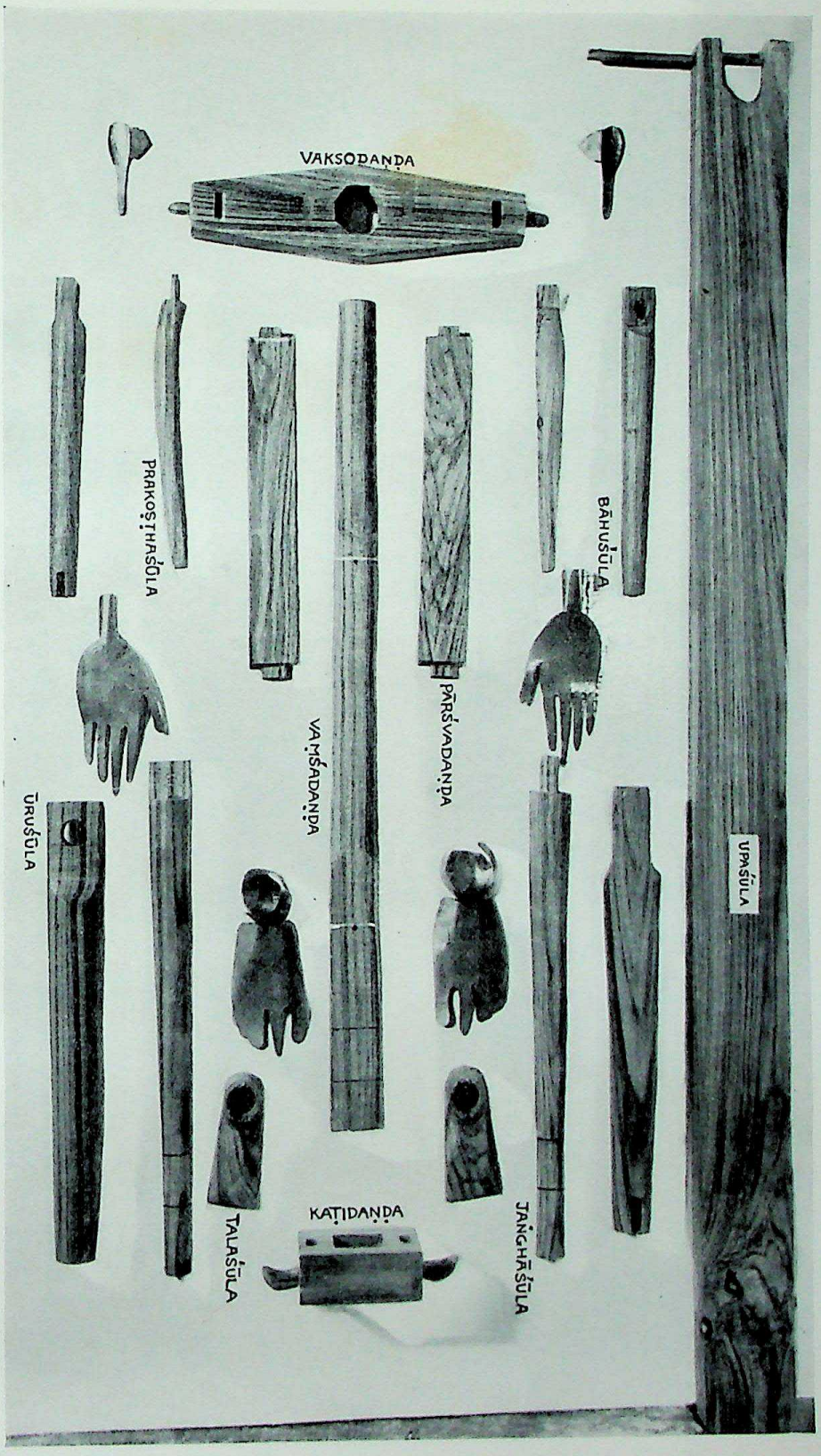


Fig. 1

Component Parts of the wooden Armature

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

PLATE II

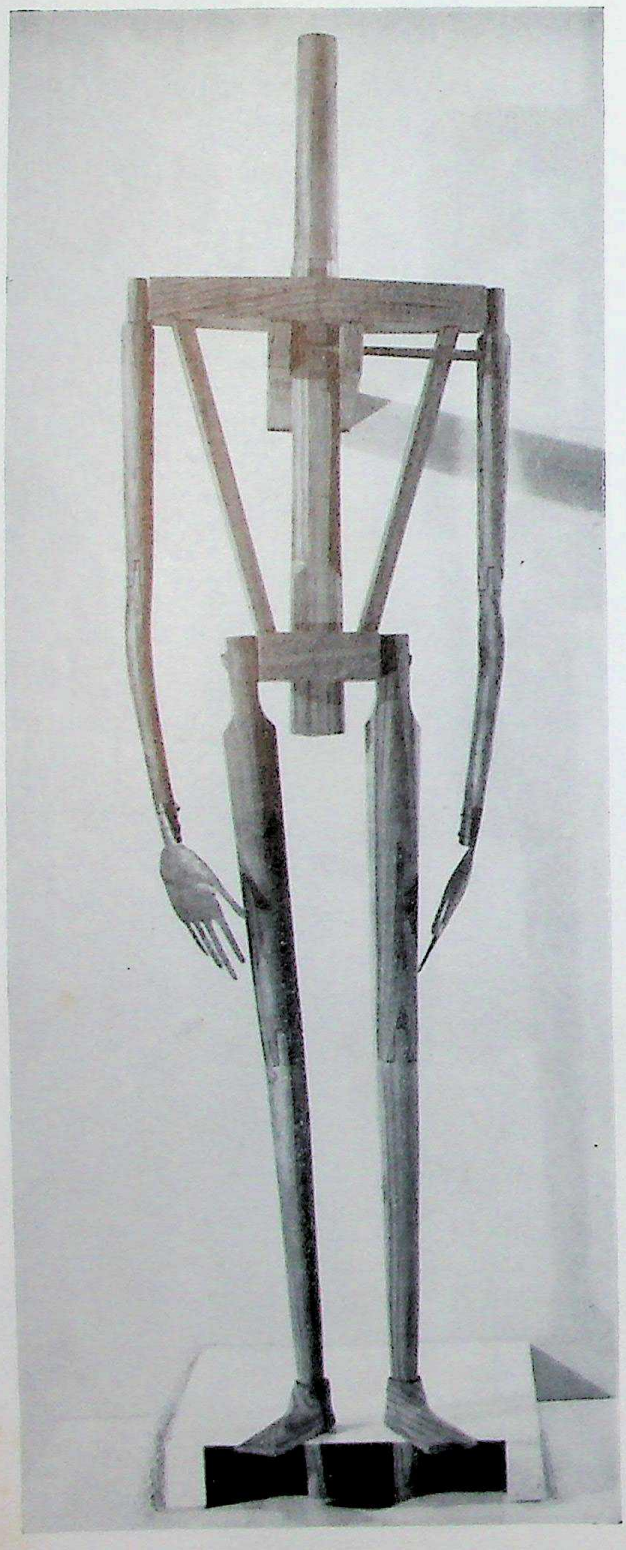


Fig. 2

Armature
assembled provisionally

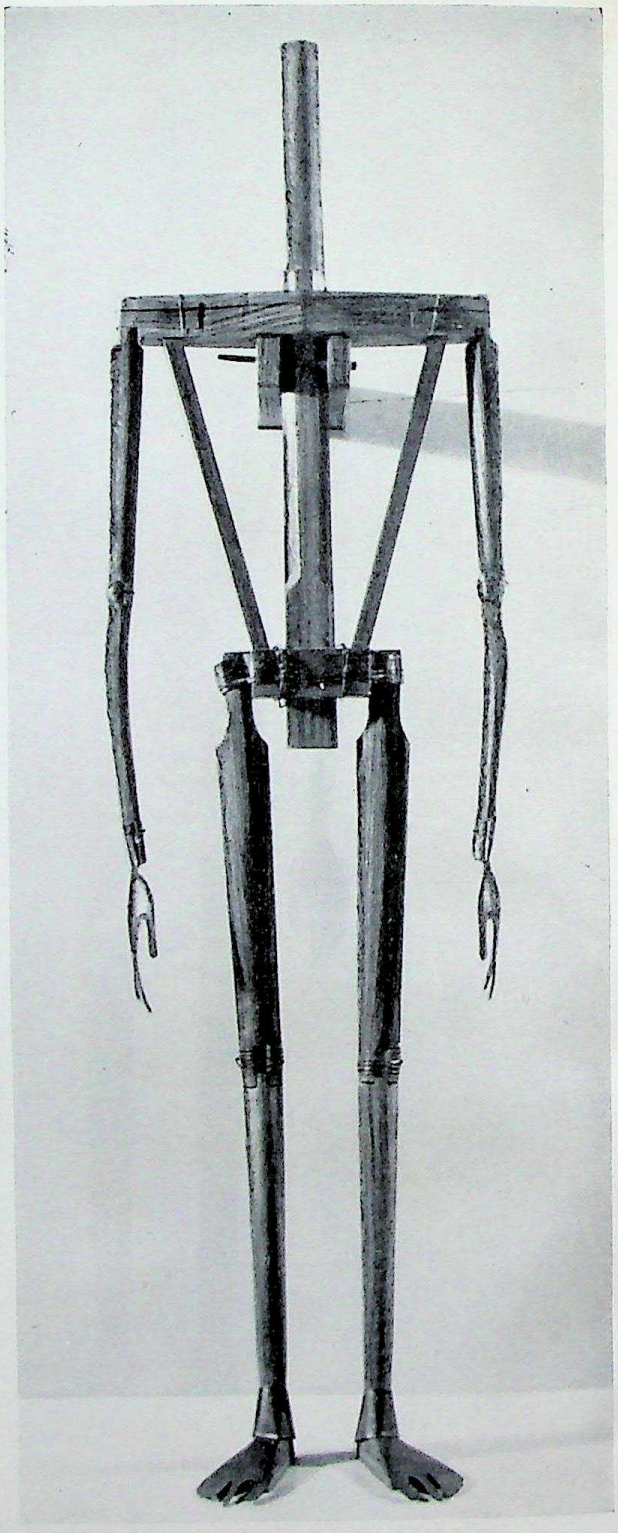
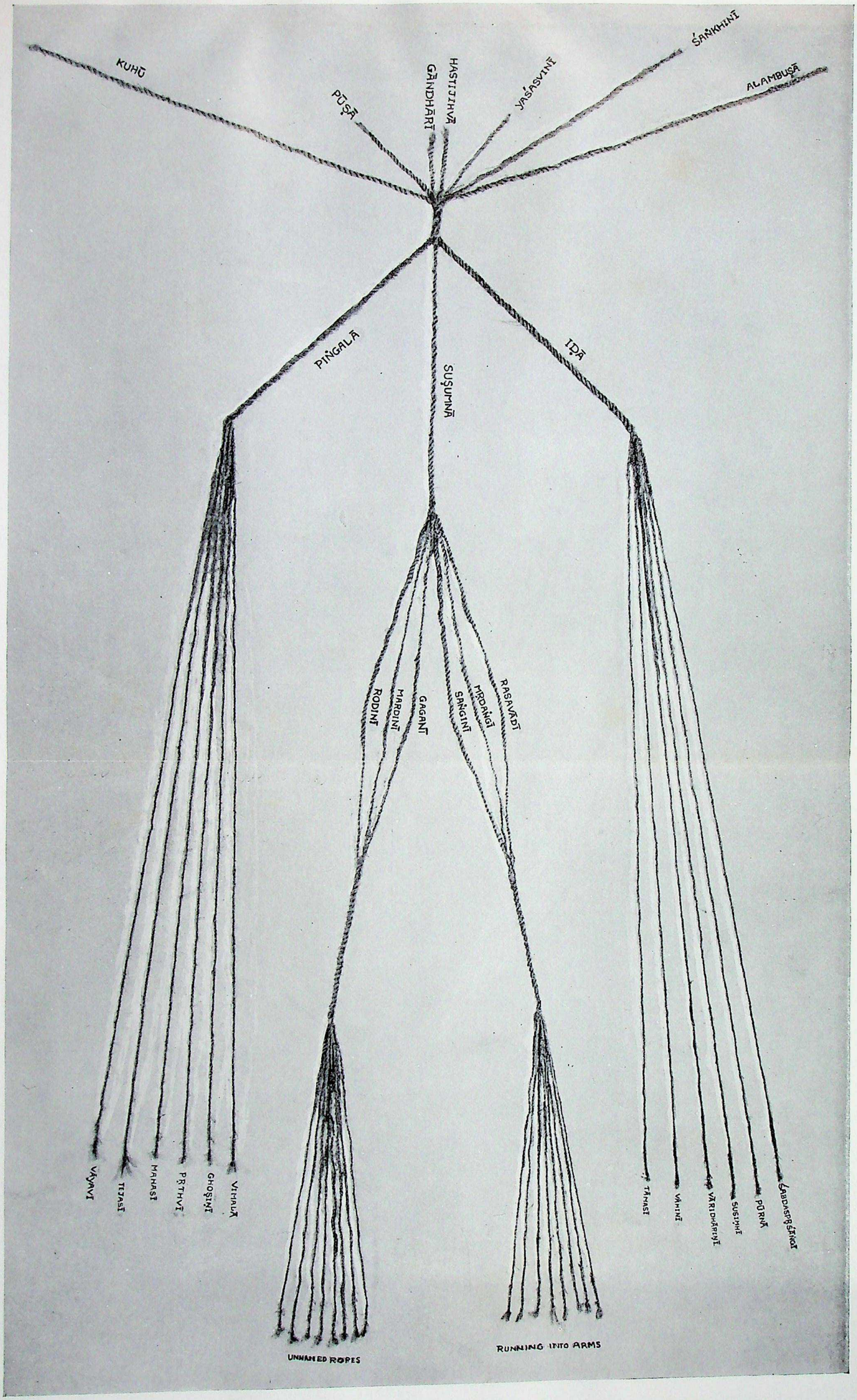


Fig. 3

Armature
fixed permanently



Single Rope made of Coconut Fibres without Knots

Fig. 4

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

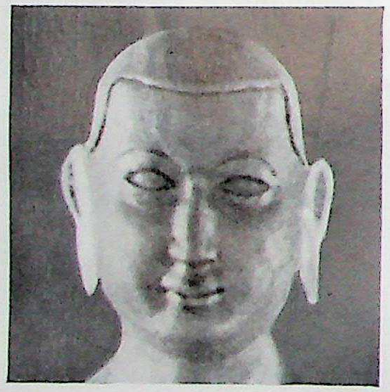


Fig. 10

Copper Plates inserted
to support the Ears

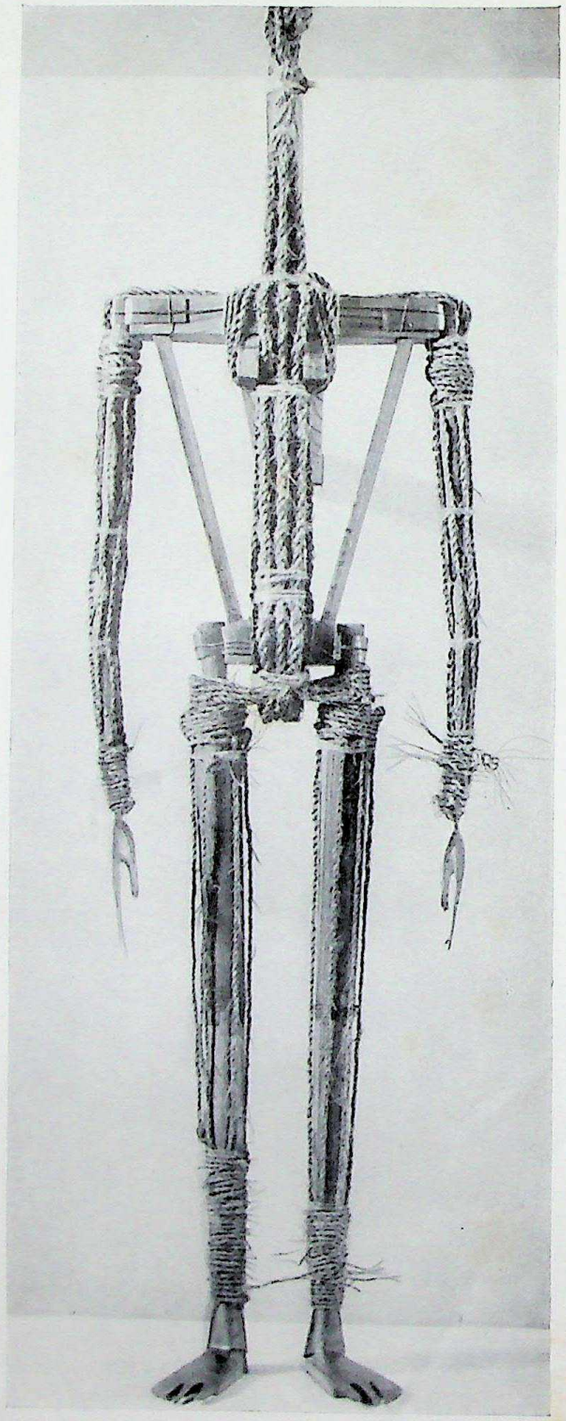


Fig. 5

Rope tied
on the Armature lengthwise

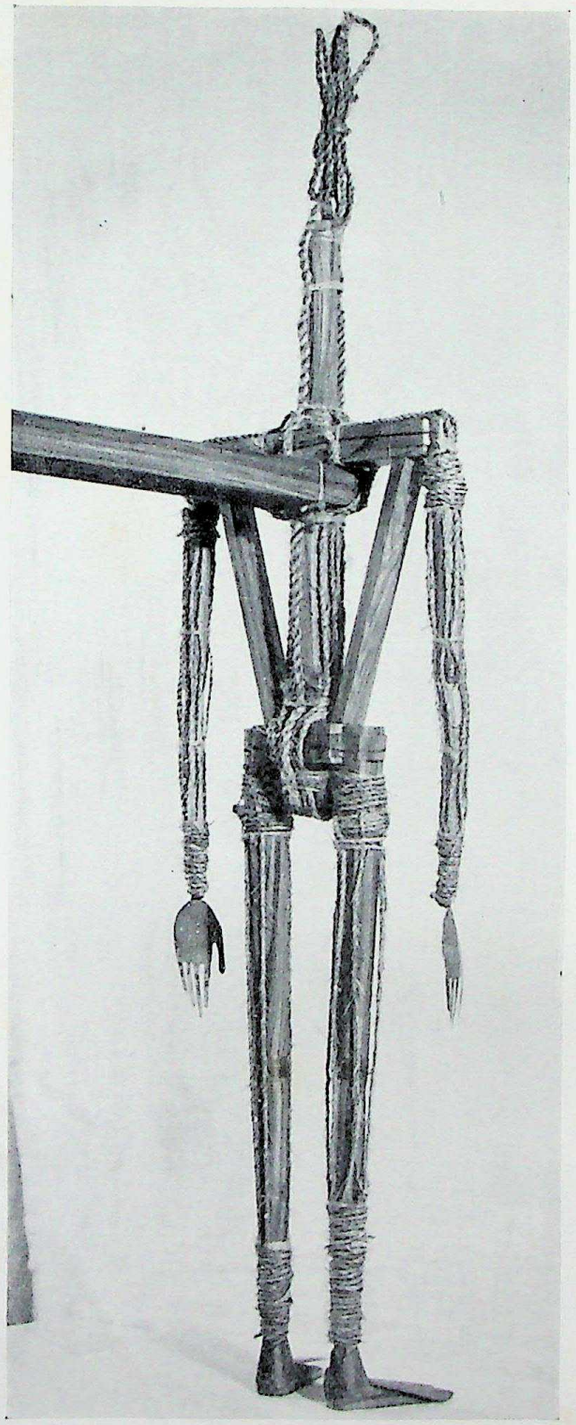


Fig. 6

Back View of *Fig. 5*

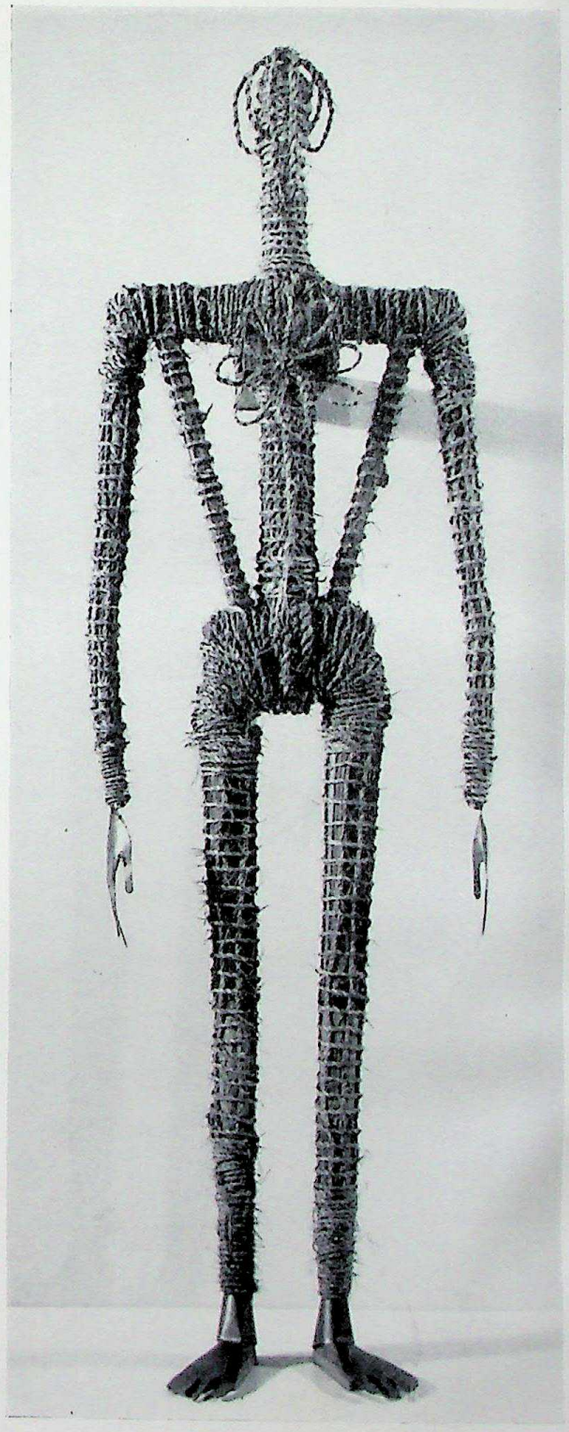


Fig. 7

Ropes tied around the Armature
over the vertical Course of Ropes

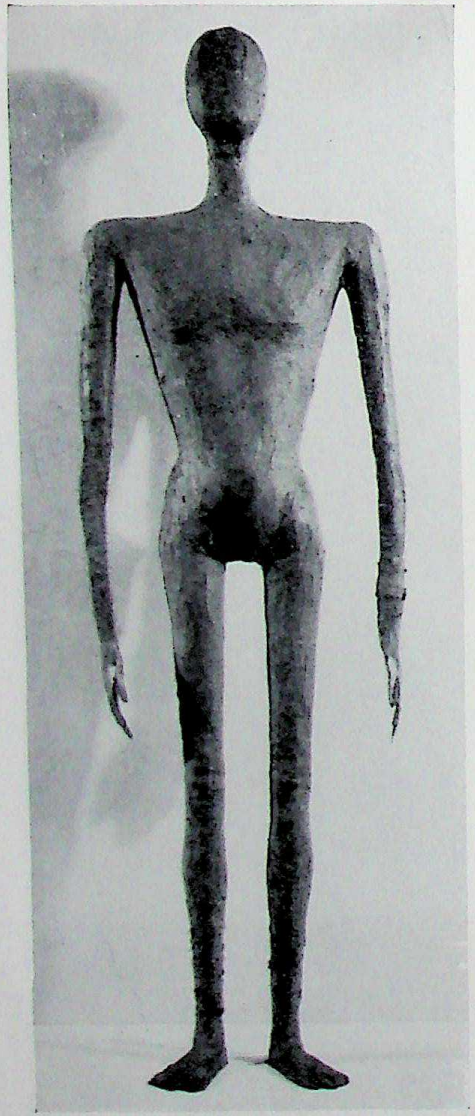


Fig. 8

Clay coated
over the Ropes

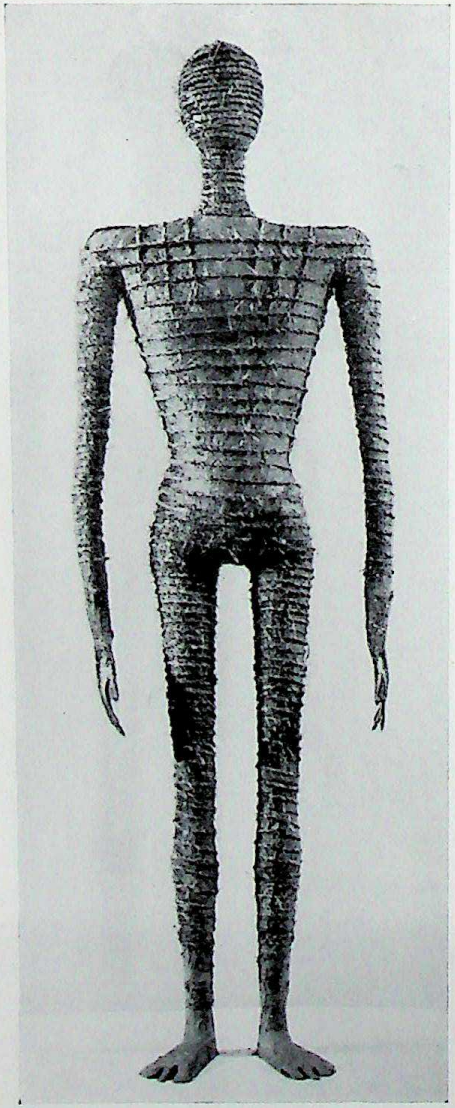


Fig. 9

Second Course of Ropes
wound over the Clay

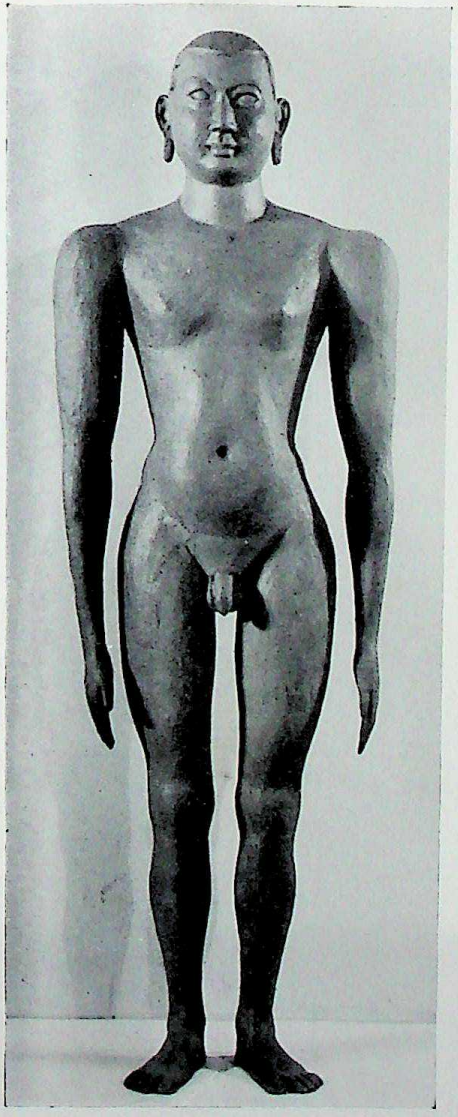


Fig. 11

Finished after further Coats of Clay
(in Place of Clay and other Materials as well)

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

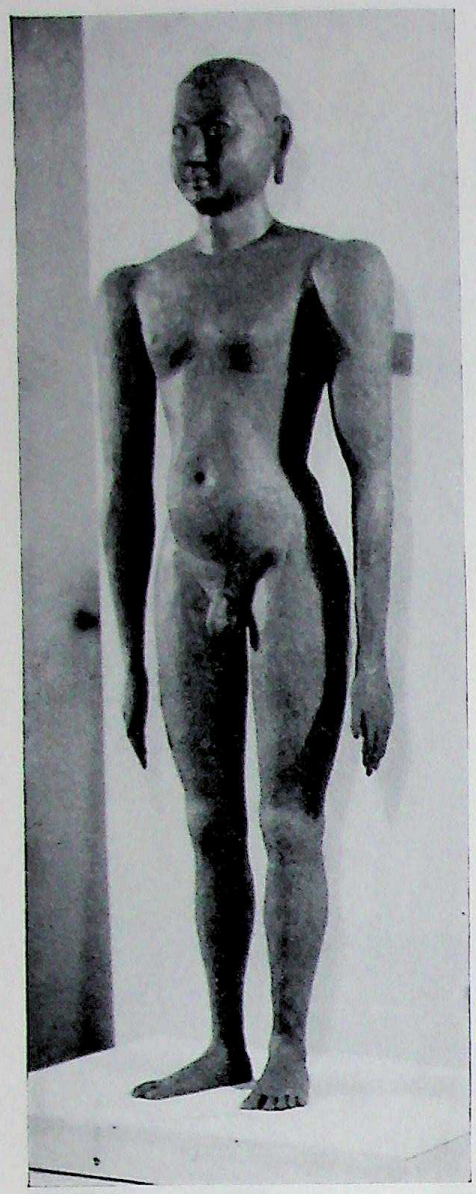


Fig. 12
Front Three-Quarter View
of *Fig. 11*

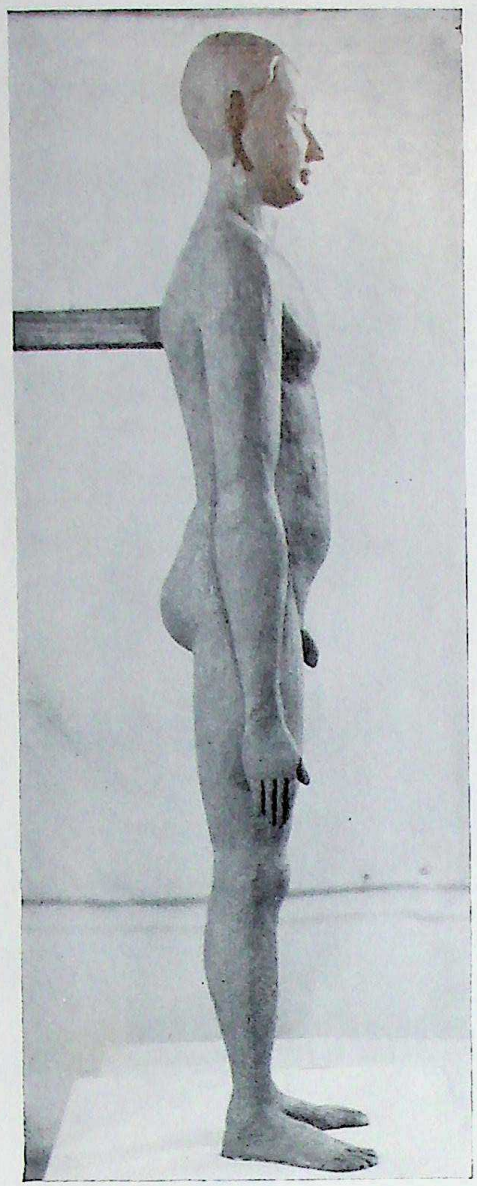


Fig. 13
Side View of *Fig. 11*
with Support visible

Fig. 14
Back Three-Quarter View of *Fig. 11*
with Support visible

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

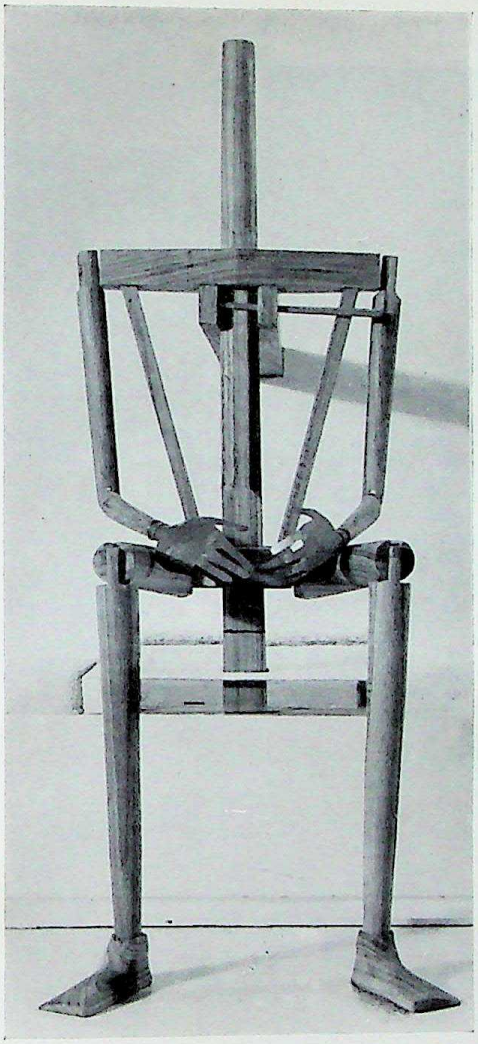


Fig. 15

Armature of Sitting Image
built with the same Parts as those in Pl. I

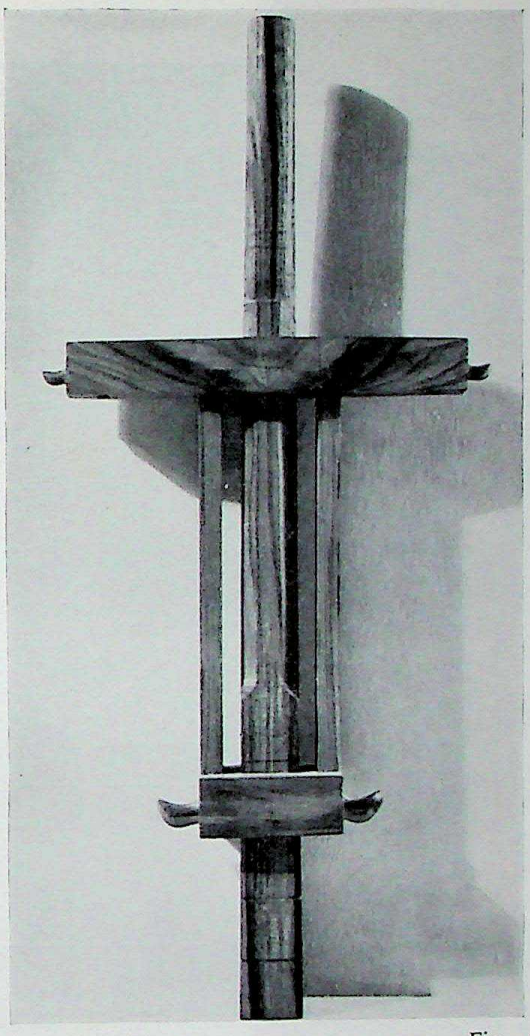


Fig. 16

Assemblage of some Parts
of the Armature

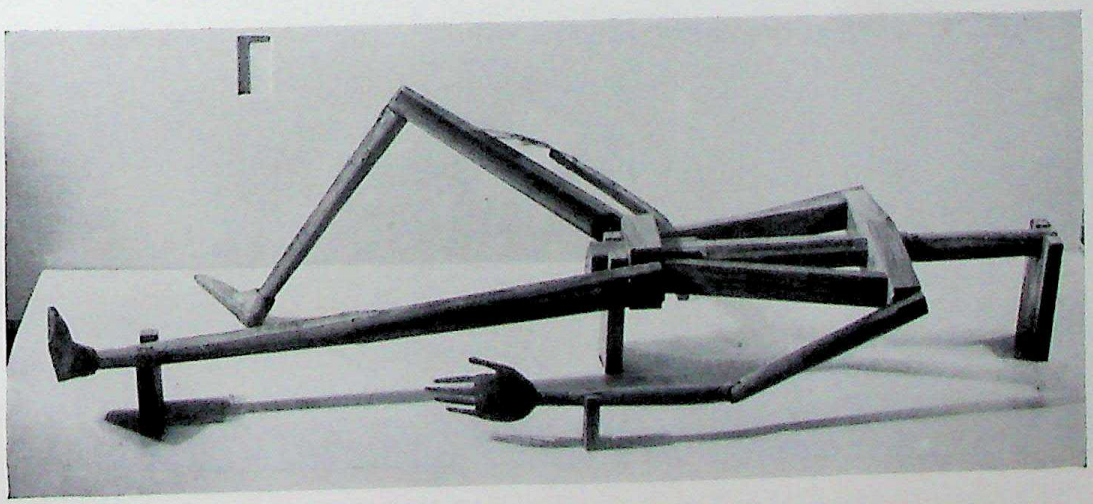


Fig. 17

Armature of the Reclining Image built with the same Parts as those in Pl. I

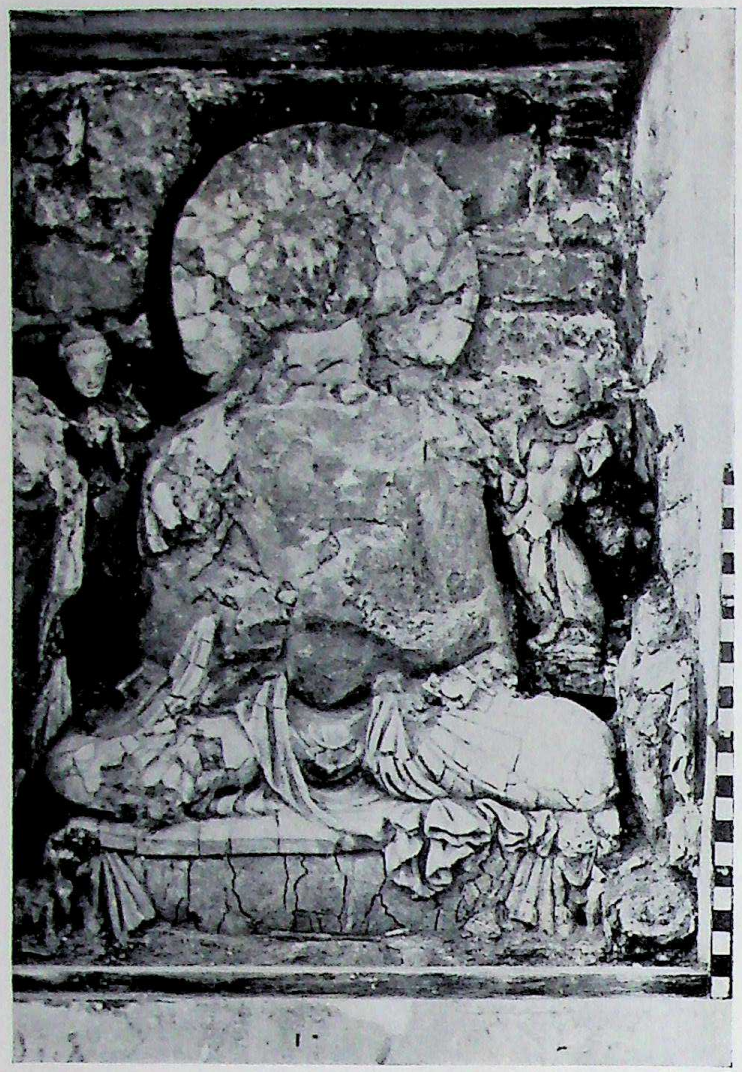


Fig. 18

Buddha with Adorers *(in situ)*
Jauliān, 5th Cent. A. D. (A.S.I.)

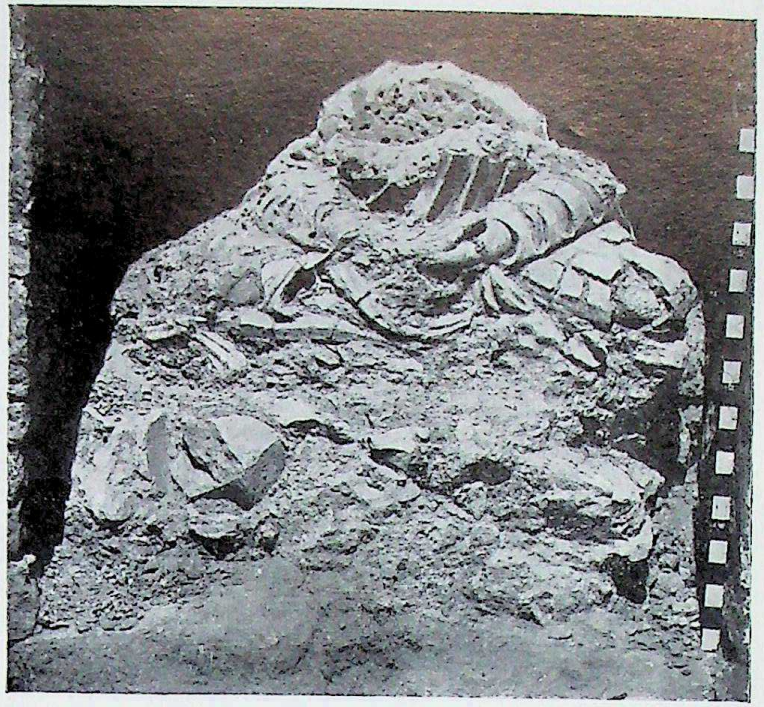


Fig. 19

Seated Buddha *(in situ)*
Mohrā Morādu, 4th-5th Cent. A. D. (A.S.I.)

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

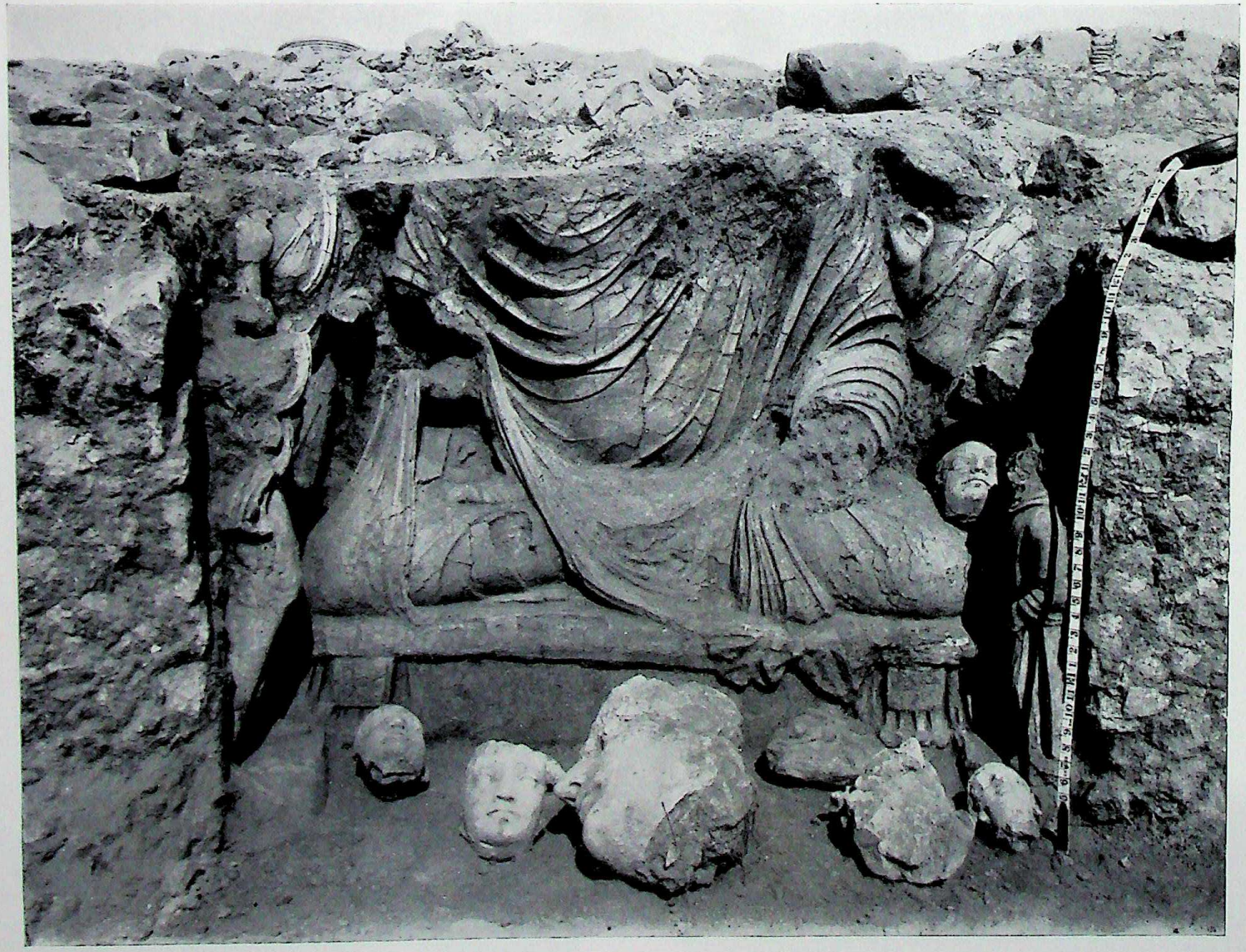


Fig. 20 Buddha with Adorers *(in situ)* Kālawān, 5th Cent. A. D. (A.S.I.)

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

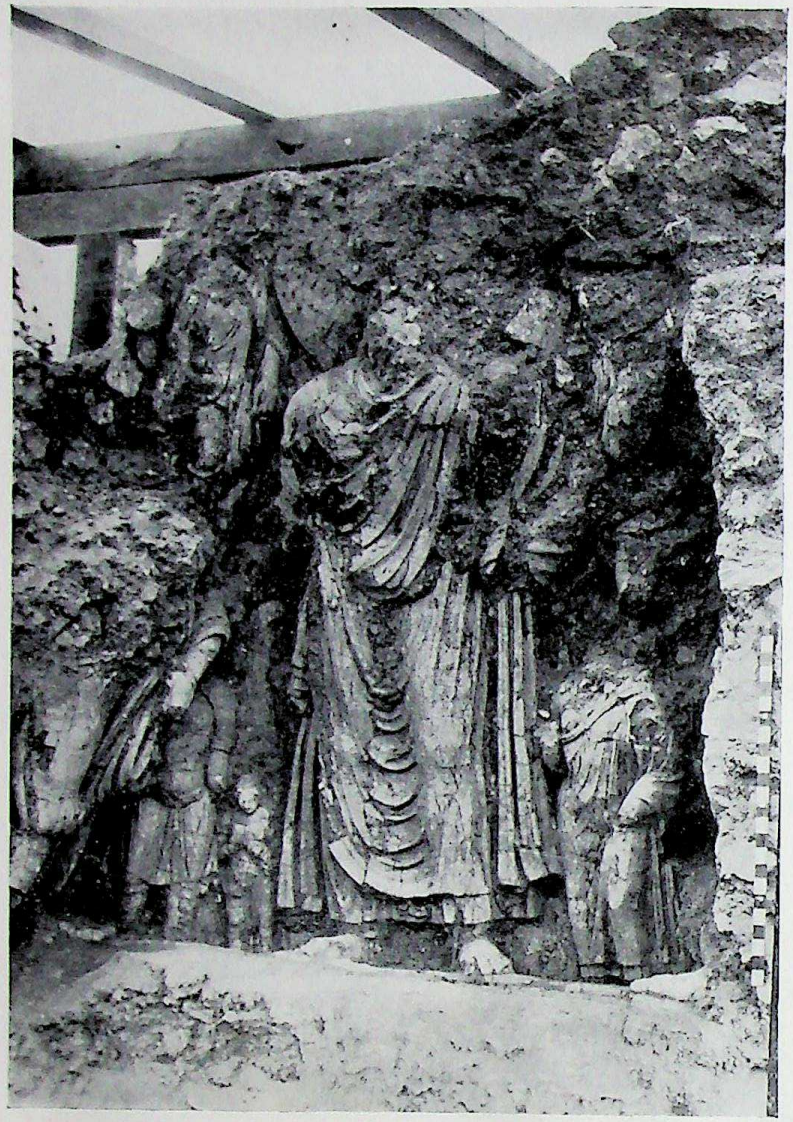


Fig. 21

Buddha with Adorers *(in situ)* (not yet fully cleared up)
Jauliān, 5th Cent. A.D. (A.S.I.)

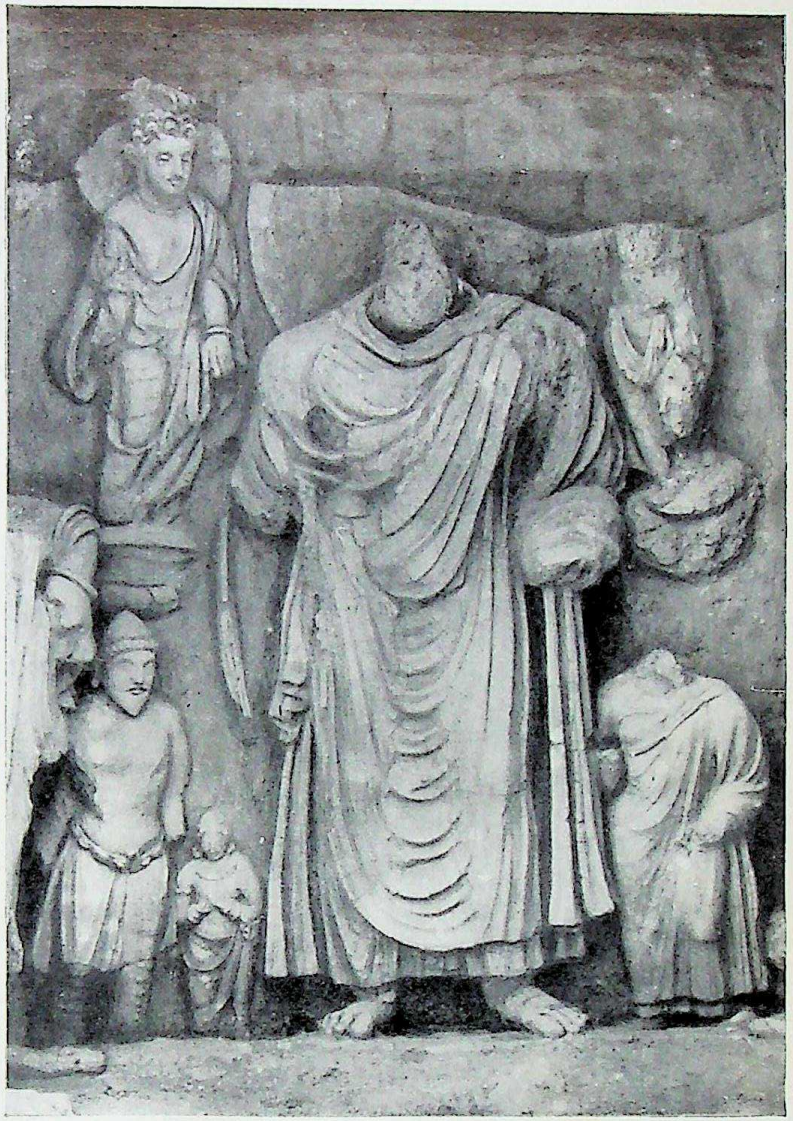


Fig. 22

Same as *Fig. 21 (in situ)* (Repairs done partly) (A.S.I.)

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

Fig. 23

Same as *Fig. 21 (in situ)*
(Restoration completed) (A.S.I.)

Fig. 24

Same as *Fig. 21*
(Removed to Taxila Museum) (A.S.I.)

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

Fig. 25

Female Head, Akhnur, Jammu, 6th Cent. A. D. (I.M.)

Fig. 26

Side View of *Fig. 25* (I.M.)

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

Fig. 27

Back Three-Quarter View of *Fig. 25* (I.M.)

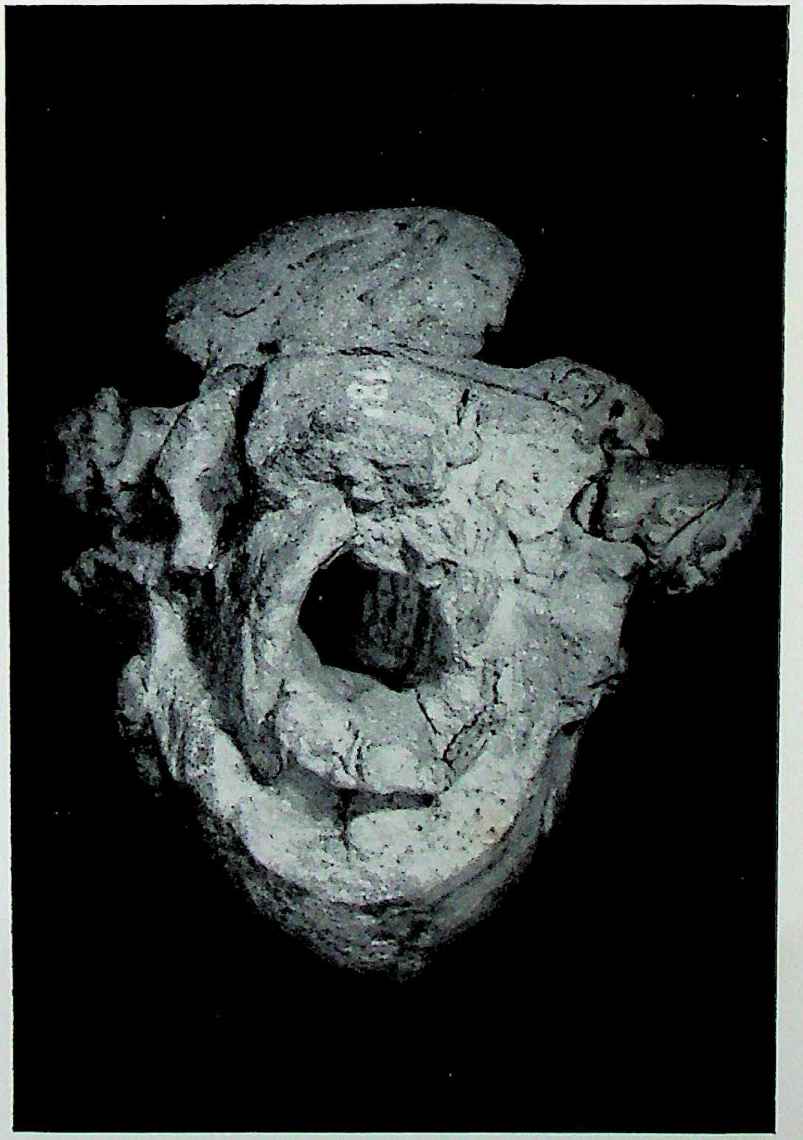


Fig. 28

Section at the Neck of *Fig. 25* (I.M.)

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

Fig. 29

Head of Bodhisattva or Deva
Jauliān, 5th Cent. A. D. (A.S.I.)

Fig. 30

Female Head (?), Dharmarājika Stūpa, Taxila
4th Cent. A. D. (A.S.I.)

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

Fig. 31

Head of a Youth, Akhnur, Jammu
6th Cent, A.D. (I.M.)

Fig. 32

Two Male Devotees, Jauliān
5th Cent. A.D. (A.S.I.)

Fig. 33

Head of a *Deva*
Mohrā Morādu, 4th–5th Cent. A.D.
(A.S.I.)

Fig. 34

Male Head
Jauliān, 5th Cent. A.D.
(A.S.I.)

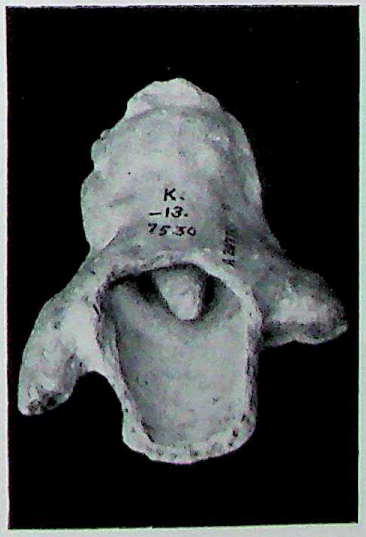


Fig. 35

Back View of a broken
Terracotta Figurine, Kosam, U. P.
Date Uncertain (I.M.)

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

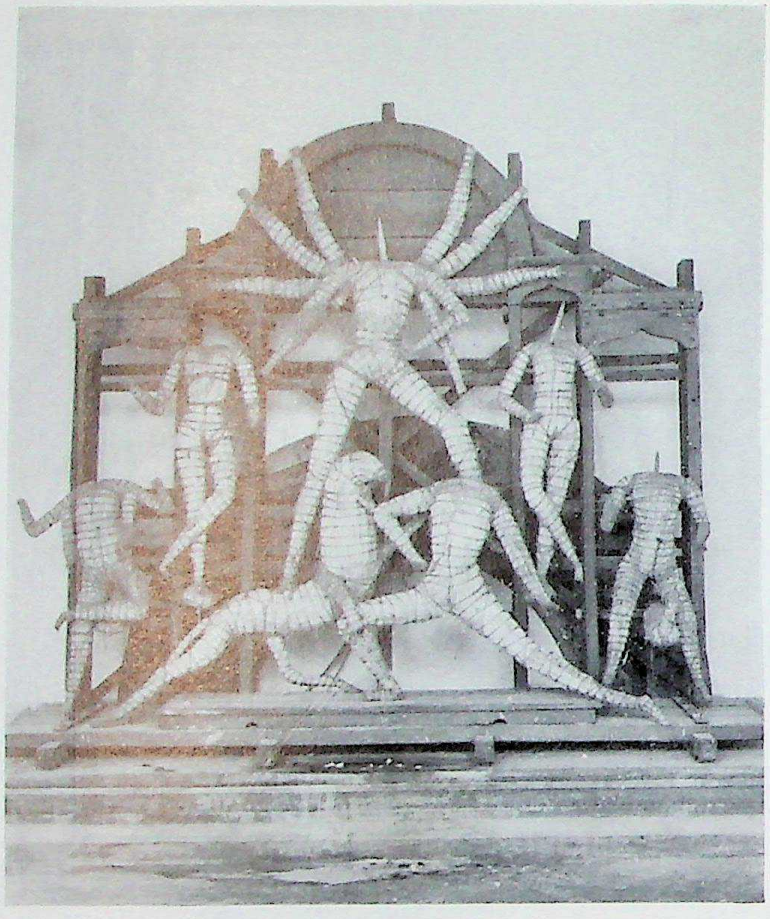


Fig. 36 Back-Frame and Straw Core
Durgā, Mahiṣāsuramardinī with accompanying Deities
Surul, Bengal, 1966

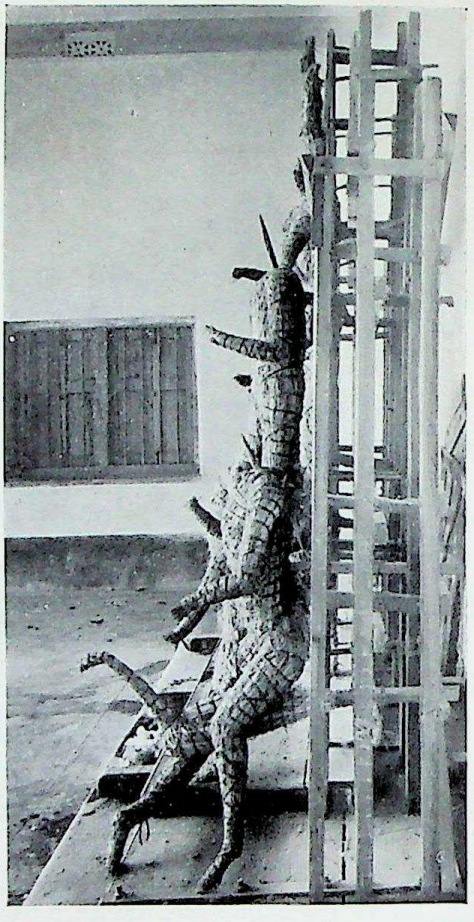


Fig. 37
Side View of *Fig. 36*

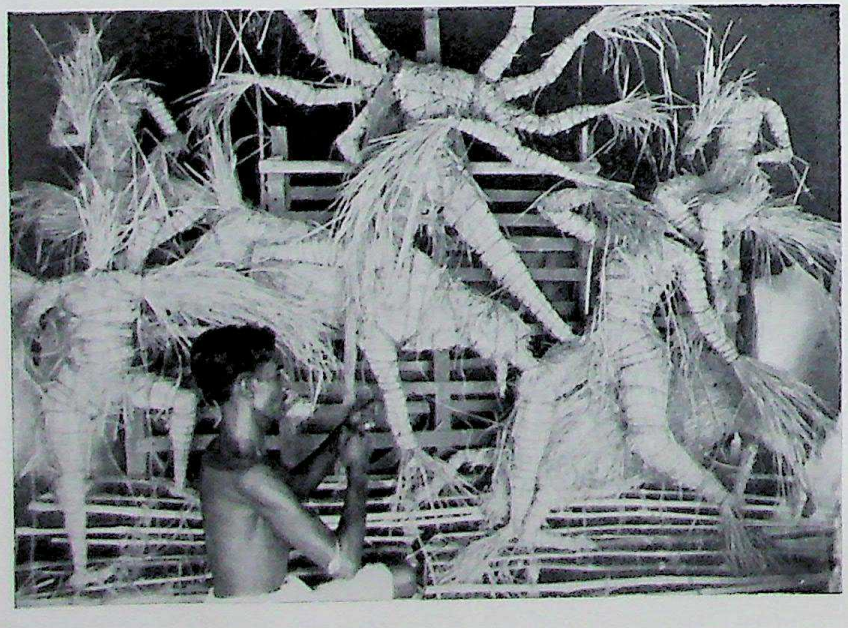


Fig. 38 Similar as *Fig. 36*
Bhubaṇḍāñgā, Bengal, 1956

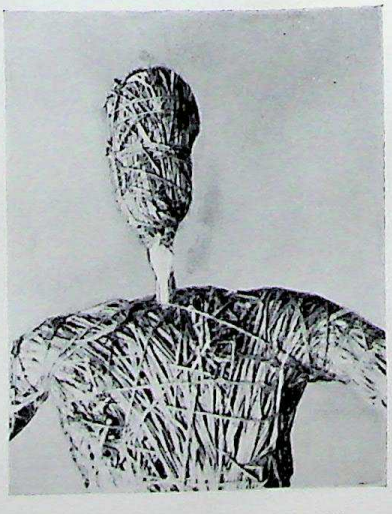


Fig. 39
Straw Core of Mahiṣāsura
Bhubaṇḍāñgā, Bengal, 1967

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

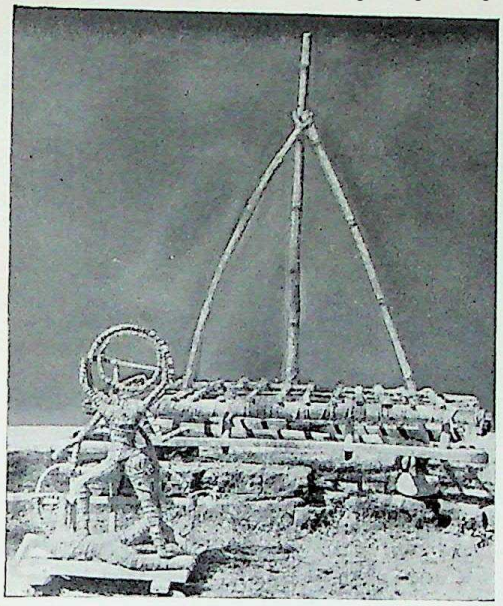


Fig. 40

Bamboo Armature of Kālī
(as *Fig. 39*)

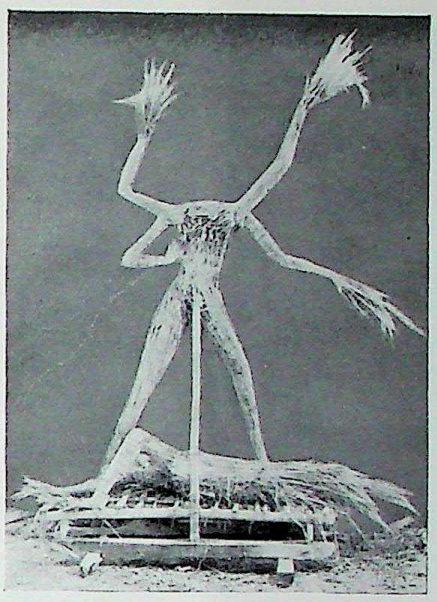


Fig. 41

Same as *Fig. 40*
with Straw tied over

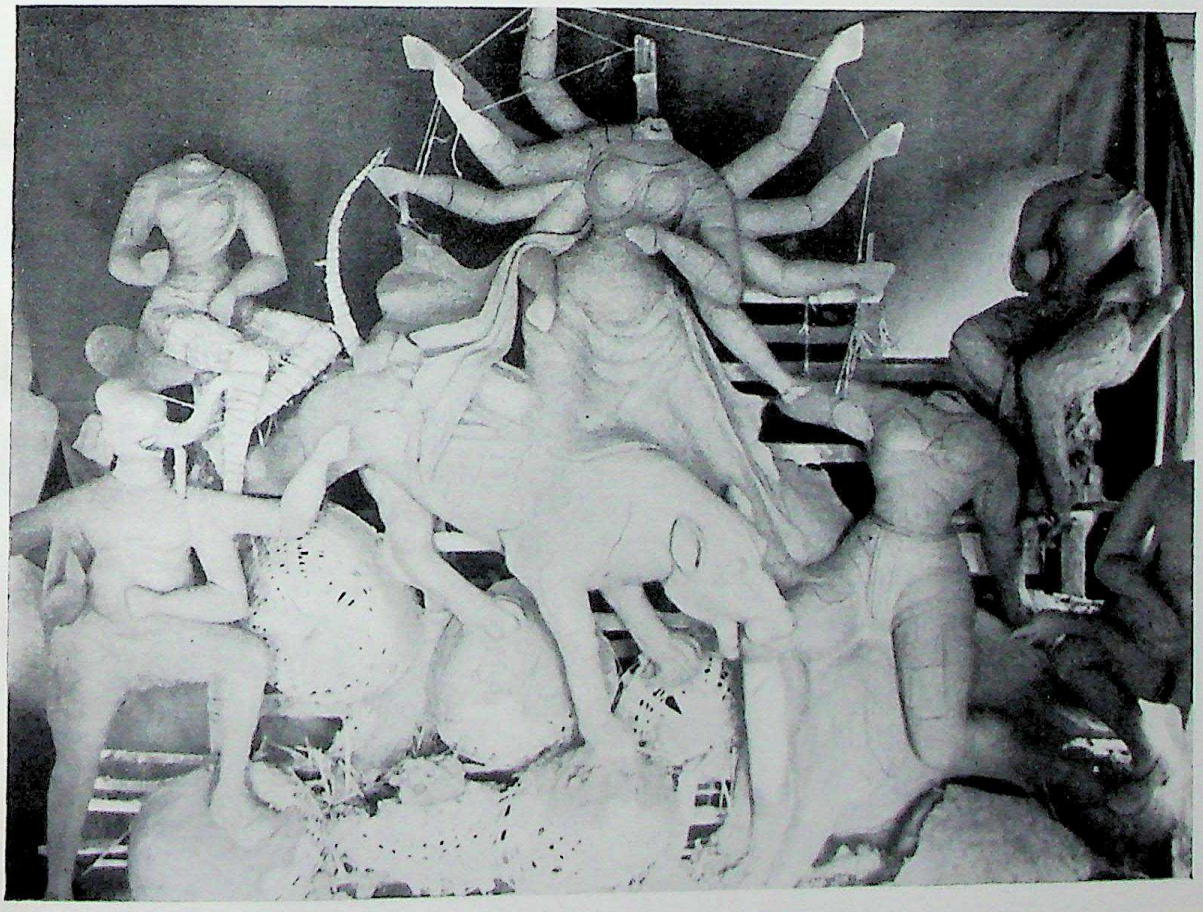


Fig. 42

Same as *Fig. 38*, One Coat of Clay is partly given

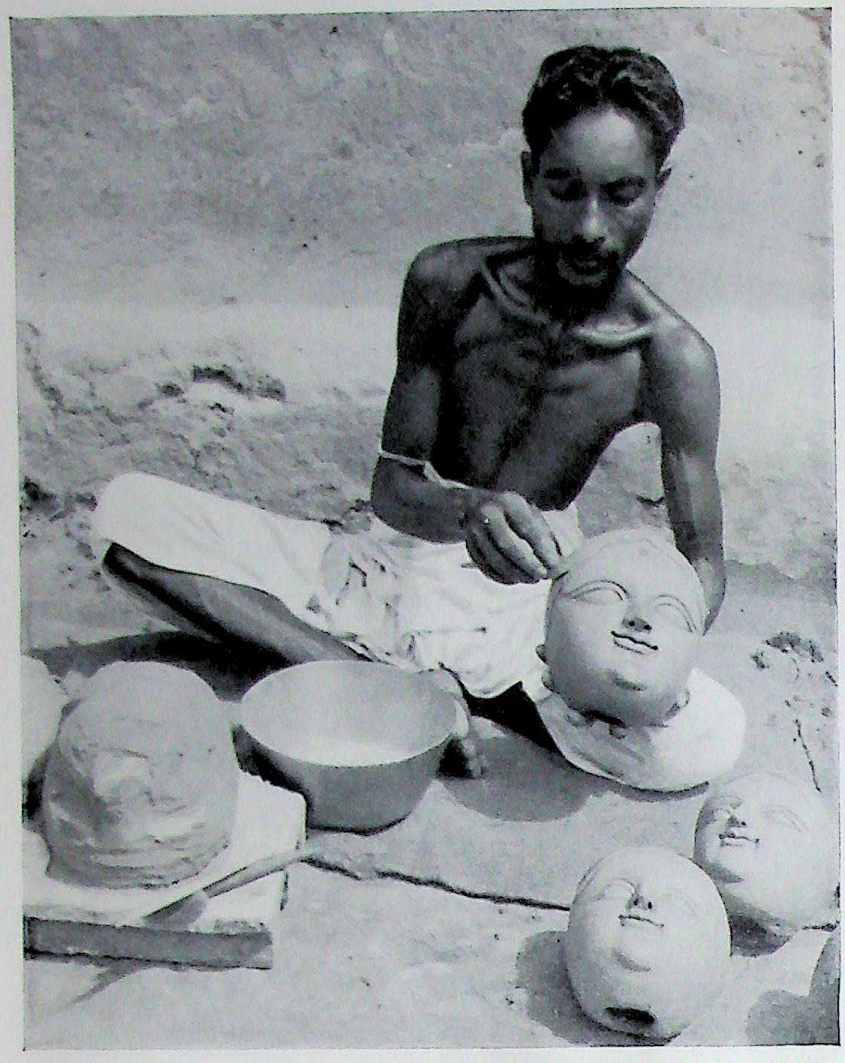


Fig. 43

Modelling of the Heads by hand
for *Fig. 38*

Fig. 44

Instruments and Heads
as in *Fig. 43*

Fig. 45

Moulds and Casts of Ornaments
Bhubaṇḍāṅgā, Bengal, 1967

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

Fig. 47
Mould made of unbaked Clay
Bhubaṇḍāṅgā, Bengal

Fig. 48
Cast from *Fig. 47*, 1967

Fig. 49
Back View of *Fig. 48*

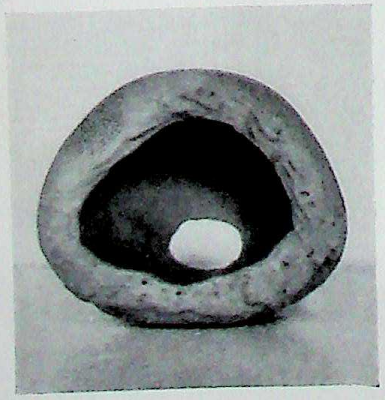


Fig. 50
Cast Head from the Top
Bengal, but Place and Date unknown

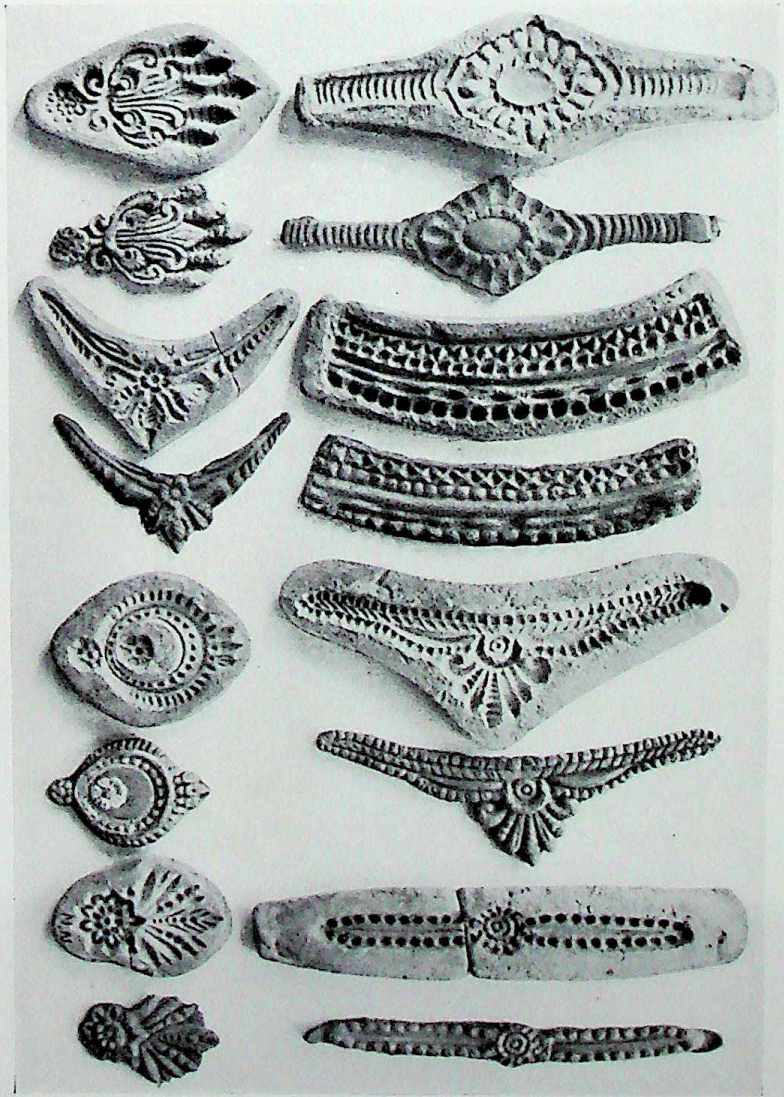


Fig. 46
Similar as *Fig. 45*

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

PLATE XX

Fig. 51

Mould
made of stucco
Bhubaṇḍāṅgā, Bengal

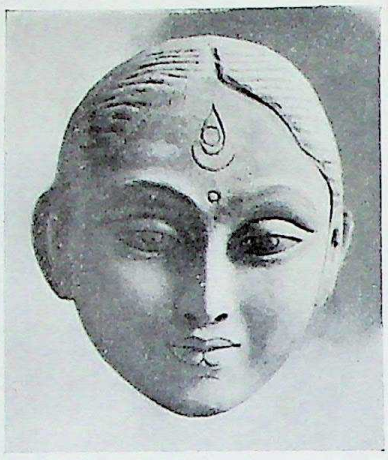


Fig. 52

Cast
from *Fig. 51*, 1967

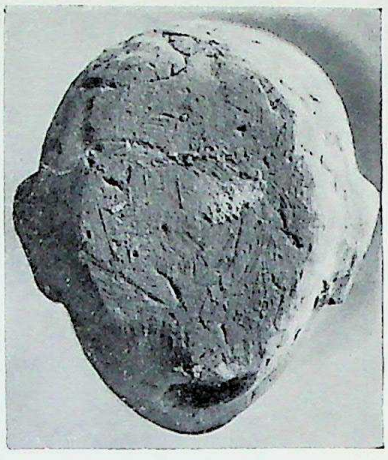


Fig. 53

Back View
of *Fig. 51*

Fig. 54

Separately made Head attached
Bhubaṇḍāṅgā, Bengal, 1956

Fig. 55

Similar as *Fig. 54* but from Back
Bhubaṇḍāṅgā, Bengal, 1967

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

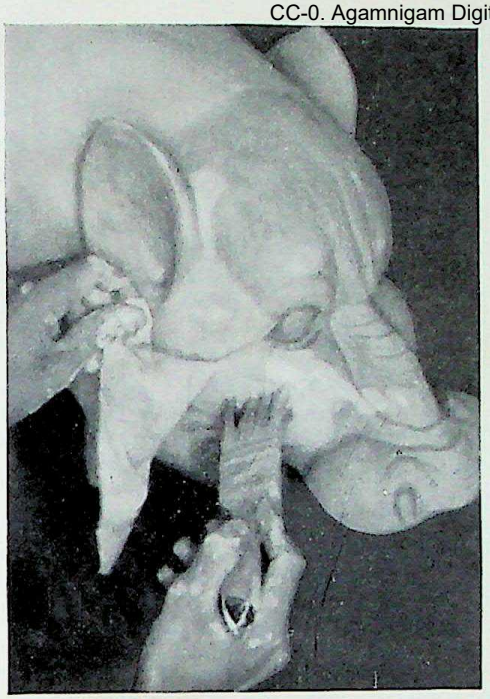


Fig. 56

Cloth being pasted
Bhubaṇḍāṅgā, Bengal, 1956

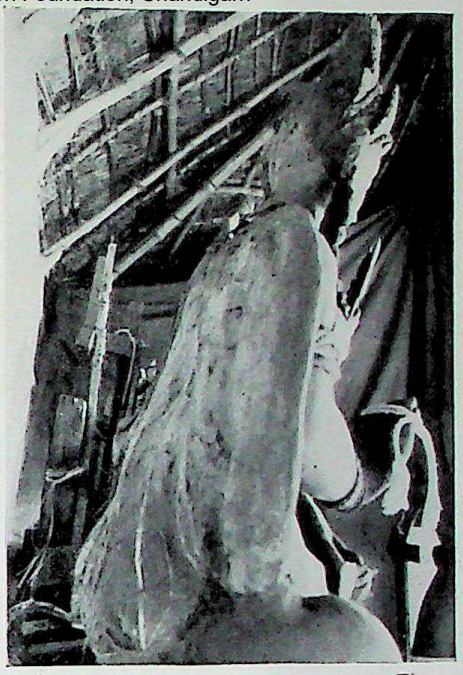


Fig. 58

Back View of the Image
on the right Side of *Fig. 57*

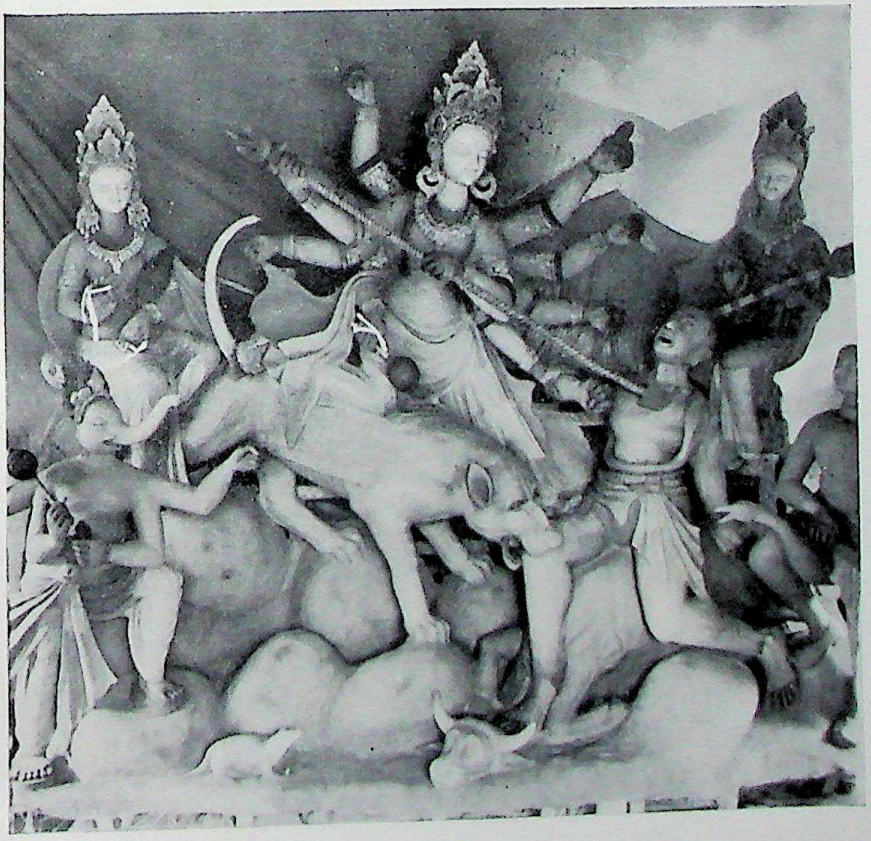


Fig. 57

Work with Clay, including the attachment of the Ornaments
and pasting Cloth is over, *Cf. Figs. 38 & 42*

Fig. 59

Same as *Fig.* 57,
but with White applied fully

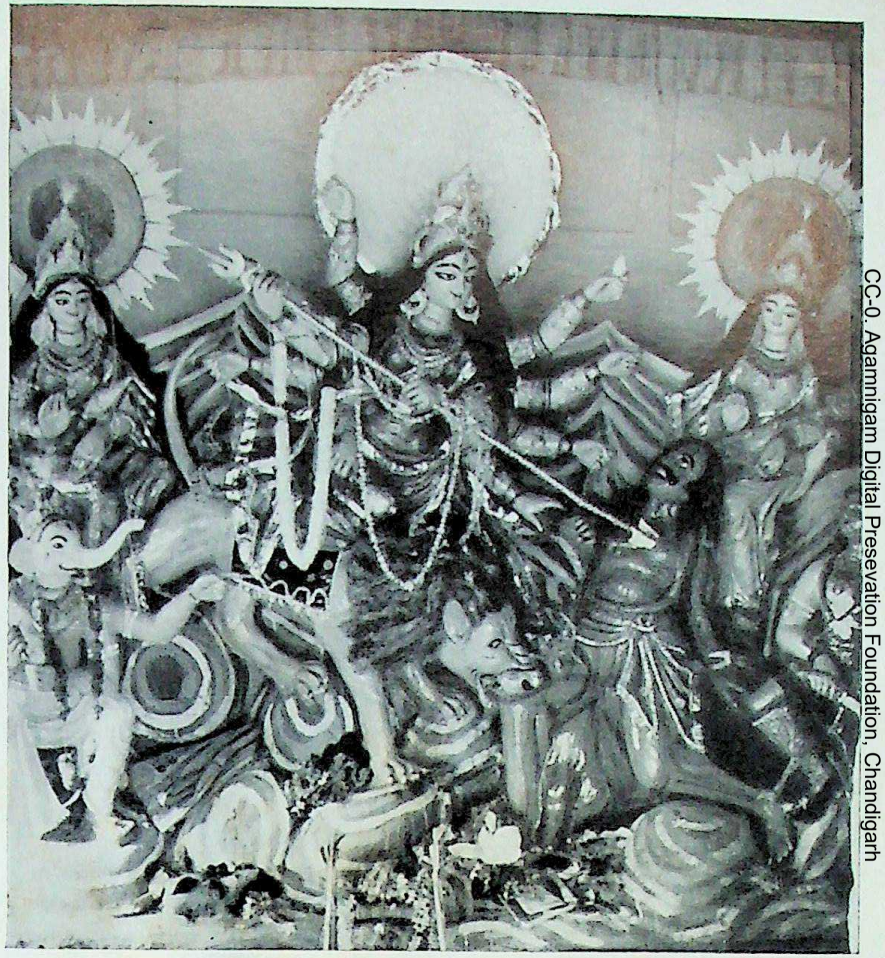


Fig. 60

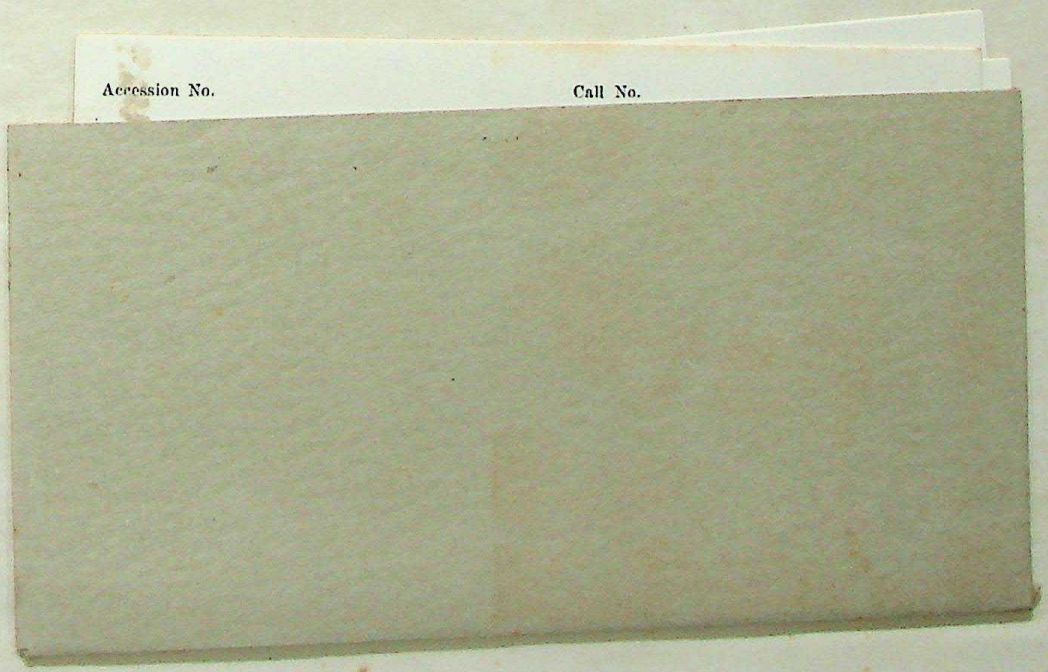
Durgā, Mahiṣāsuramardinī complete with Colouring
Bhubanḍāṅgā, Bengal, 1956

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

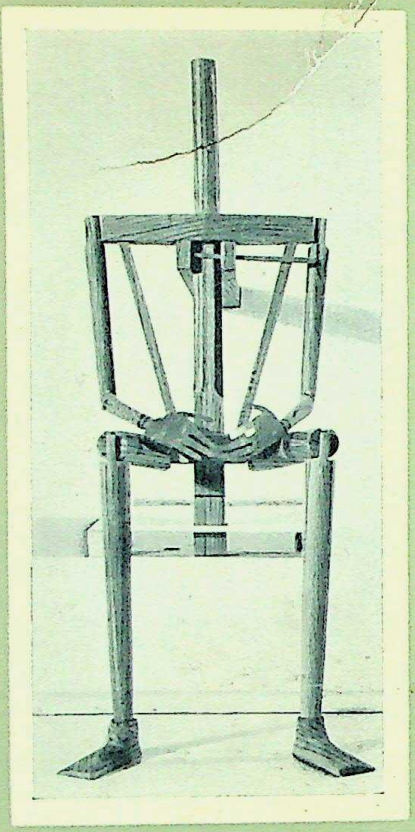


CC-0. Agamnigam Digital Presevation Foundation, Chandigarh

CC-0. Agamnigam Digital Preservation Foundation, Chandigarh

Library Cards

Each of the three library cards included in the pocket inside this board, contains all the information required, and as the space is economically and meaningfully organized, it makes superfluous to pre-pare them in different forms (see preface, pp. xvii-xviii). Only thing you have to do is to place them, after adding the required numbers, in three different shelves— meant for title-subject- and author- cards— provided you have them already. If more— in this case four more— cards are needed, they could be prepared instan-taneously, for it is a matter of simple copying.



Other Works by the Same Author

NATYA NRTTA AND NRTYA
THEIR MEANING AND RELATION

★

SEVEN WORDS IN BHARATA
WHAT DO THEY SIGNIFY

★

TECHNIQUE OF GANDHARAN AND INDO-AFGHAN
STUCCO IMAGES
(To be published soon)

★

WHY SAMAPADA IS A CARI
IN DANCE
(A brochure to be published soon)